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ABSTRACT

This examination of the feasibility of implementing an automated circulation system within San Mateo County's Peninsula Library System (PLS) was undertaken to determine if the system should automate material circulation systemwide in order to reduce operating costs while improving circulation procedures and increasing patron access to system collections. The report describes PLS cooperative programs, current PLS circulation operations, PLS problems and objectives, circulation control alternatives, and a PLS action plan. Appendices and exhibits illustrate cost data, system configurations, budgetary information, and other considerations. (FM)

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REPORT ON A STUDY OF THE FEASIBILITY OF AUTOMATED CIRCULATION SYSTEMWIDE FOR PENINSULA LIBRARY SYSTEM (San Mateo County, California)

Sponsored and Directed by:
Governmental Research Council, For
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by

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November 1980

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This report is heavily indebted to the Mountain-Valley Library System report: A Feasibility Study for the Automation of Circulation Systemwide, by Joseph Matthews, August, 1979, both for guidance and specific text. Specific authority was granted by Matthews for incorporation of substantial amounts of text into this report from the Mountain Valley Library System Report, where such text deals with overall principles and guidelines for circulation automation, as distinguished from operational information dealing with individual libraries within the Peninsula Library System.

Many thanks to the Librarians of the Peninsula Library System member libraries and Jane Light, Director of the Peninsula Library System. Their thoughtful comments and suggestions about the direction the report should take were extremely helpful in completing the study.

EXECUTIVE SUMMARY

The Governmental Research Council (GRC) designed a library service feasibility study to analyze the possibility of implementing an automated circulation system(s) within the Peninsula Library System. The purpose of the study is to determine if the Peninsula Library System should automate material circulating systemwide in order to reduce operation costs while improving circulation procedures and increasing patron access to system collections.

It has been demonstrated in other libraries around the country that once the automated circulation system has been installed and the data base converted from manual files to computer storage, there are significant savings in labor costs and additional income accrued from increased control over delinquent borrowers. As a result, existing funding allocations may be redirected to other library operations that will better serve the needs and requests of the patrons. In light of the effects of Proposition 13 on service hours, this redirection would be a welcome use of some or all labor savings resulting from automation of the circulation function. Exhibit 2 contrasts a pre-Proposition 13 circulation of 4,112,684 in 1974/75 with a post-Proposition 13 circulation of 3,576,141 in 1979/80 for the PLS libraries.

The major recommendation of this report is that the Peninsula Library System (PLS) explore the possibility of purchasing an on-line, dedicated automated circulation system serving all PLS member libraries. A single computer serving a group of libraries has significant cost advantages and

qualitative benefits when these libraries offer all patrons within a defined geographical area (San Mateo County residents) access to their collections and honor each others' library cards.

This recommendation may be difficult to implement at the present time, as the San Mateo Public Library has begun the preliminary steps to install an automated circulation system using a portion of the San Mateo city computer. In addition, the San Mateo County Library has completed a feasibility study exploring the possibility of installing and implementing an automated circulation system serving its outlets. In the course of its study, the County Library has invited other PLS member libraries who are interested to follow the study proceedings, with the possibility of participation in a selected system in the future.

The Peninsula Library System was started in 1970 to provide a framework for joint cooperative action among the public libraries in San Mateo County, California. Eight public libraries, including the seven city libraries in Burlingame, Daly City, Menlo Park, Redwood City, San Bruno, San Mateo and South San Francisco and the San Mateo County Library, serving all other cities and the unincorporated areas of the county, are members of PLS. PLS as a whole has 32 library facilities, including two bookmobiles operated by the county and one bookmobile operated by PLS for outreach services. Library services are offered to over 586,665 residents, who have access to close to 1,800,000 volumes. Over 3,500,000 circulation transactions were processed by PLS member libraries in the 1979-80 fiscal year. The total library operating expenditures budget of close to $6,500,000 for fiscal year 1979-80 was allocated to new book acquisitions, facilities maintenance,

staff salaries, etc.

Within PLS, there is a notable difference between the size of libraries, the estimated number of patrons vis-a-vis the jurisdictional population, the per capita circulation and the size of the collections (see exhibit 1). While PLS member libraries have developed individual circulation policies in the interests of their own libraries, the Peninsula Library System has joined together some operations on a county-wide basis, extending library services and resources to all county residents. Services include reciprocal borrowing privileges for residents with library cards and facilitating interlibrary loans among PLS members, as well as reference coordination, centralized borrowing of 16mm films, mobile outreach services and the Community Information Project which maintains a computer file of human service agencies to provide information and referral services to the public.

There are almost as many circulation systems as there are libraries within PLS. These systems include the photo-charging Brodac and Recordak systems, and the manual Gaylord and Dickman systems. Until July, 1980, the South San Francisco Library used the Kaiser system, but has converted to the Gaylord. Exhibit 2 displays the types of circulation systems employed by each library and library usage data.

Diversity within PLS is also shown in the circulation policies

Though over the ten years of PLS membership there has been an effort to unify these policies, wide variation continues to exist among the libraries. For example, the number of renewals allowed differs among the

libraries. Libraries have limits within different types of collections of how many items may be borrowed at one time. Though most libraries have instituted a 10¢ per day fine per item for overdues, there are variations among the types of materials that are fined given amounts.

Since the passage of Proposition 13, PLS libraries have experienced an increase in circulation on an hourly basis of 18%, though overall circulation figures show a decrease. This decrease in circulation is probably due to the reduced number of available public service hours, which were 1,772 before the passage of Proposition 13, and are now about 1,250 hours per week.

Automated systems have technical and economic limitations. In order to realize the potentials of automation, member libraries will be required to reduce the amount of diversity in loan periods, fines, reserves, etc. Basically, circulation control policies must have a limited set of options in order to keep the system responsive to necessary circulation transactions and to minimize any special programming that may be needed to accommodate PLS circulation control policies. IT IS IMPORTANT TO EMPHASIZE THE ROLE THAT MANAGEMENT SHOULD EXERT IN SELECTING BOTH POLICIES AND TECHNOLOGIES THAT ARE CONSISTENT AND COHERENT WITH THE SPECIFIED CIRCULATION CONTROL SYSTEM OBJECTIVES.

Advantages of automated circulation control systems closely address the problems found in the existing manual and photocharging circulation control systems. Time consuming activities include locating specific titles, taking and trapping holds for patrons and processing overdues, including the identification of delinquent patrons. Within PLS, advantages of automation

are shown both within each library and between the libraries. Of total circulation, about 20% is to "PLS" patrons (i.e., non-residents of the loaning jurisdiction). Most of these are direct loan, not ILL, though. Nearly 80% of the total circulation appears to be direct borrowing by PLS patrons from their own local library.

THE ACTIVITIES RECOMMENDED FOR AUTOMATION, BASED ON THE CAPABILITIES OF EXISTING AUTOMATED SYSTEMS, A REVIEW OF THE DATA, DISCUSSIONS WITH PLS LIBRARIANS AND VISITS TO THE LIBRARIES INCLUDE:

- Identify items, borrowers and circulation transactions.
- Register borrowers.
- Check-out/check-in of items.
- Processing overdues.
- Control delinquent borrowers.
- Renew items.
- Collect and record fines.
- Establish holds and trap items when returned.
- Facilitate the preparation of statistics.
- Provide current information for all inquiries.
- Aid in improving security.

A key feature of automation is the virtually complete automation of overdue notice and bill preparation, registration and the trapping of delinquent patrons and hold processing. If PLS member libraries came to agreement on discretionary circulation policies and, as much as possible, created a shared circulation system, then the implementation of the currently defined joint

activities would be part of a county-wide effort to control materials and patrons on a regional basis, at the same time building internal control for each participating library.

On a regional basis, a shared circulation system could increase control of the collections of all the libraries while making these materials more available to a wider patron population. PLS specifications for inter-library activity should call for:

- Capability to determine availability and place holds (subject to certain controls) on items owned by other member libraries.
- Determination and updating of patron status for all member libraries.
- Identification and trapping of items based on their being required by the owning library (when circulating outside that library).
- Identification of items borrowed directly by PLS library patrons.
- Providing for overall control of, and reporting on, the level of inter-library activity.

Two major types of computer systems have been discussed for implementation by PLS: the shared use of a city-county computer and the use of a dedicated "turnkey" system. In a city-county computer, the library uses a portion, while other city-county departments also have use of other portions of the computer. A "turnkey" computer is one that is purchased from a vendor that is ready for use by the customer. Hardware and software have been tested and/or used by other customers, establishing a track record of reliability.

The recommended system for PLS would be a single computer shared by the eight member libraries. Implementation of such a system shows the highest net

present value of alternatives, with a payback of system investment at the end of the fourth year of implementation. Deducting the approximately year-and-a-half of equipment installation and conversion of data, the system takes nearly 2½ years to recover the investment costs and begin to show a cost-benefit. However, at the present time, there is not sufficient active interest on the part of all PLS member libraries to participate in one shared system.

A second alternative within the concept of one shared computer for a group of libraries was developed including five libraries: Burlingame, Menlo Park, Redwood City, San Bruno and San Mateo County. According to the net present value of alternatives, this alternative has the lowest net present value, with the system requiring 6.6 years to pay back the original investment costs, or need 5.1 years of full operation to cover the initial investment costs. This longer payback period may be a result of two of the larger libraries in the county, San Mateo City and Daly City, not wishing to participate at the present time.

A third alternative is defined as the libraries acquiring two separate computers from the same vendor. A problem at this time is that no interfaces for this type of operation have yet been developed. Therefore, since interfaces are not available this alternative will not be given further consideration.

METHODOLOGY

I. Background

The study was conducted by independent contractors, to analyze the feasibility and cost-effectiveness of the Peninsula Library System member libraries to participate in an automated circulation system.

II. Research Methods

A. Study Activities

The Peninsula Library System Board has been involved since the development of the report concept and provided guidance in the selection of the subject area. To identify and document PLS member library circulation operations and costs, labor requirements and costs, types of automated systems available to libraries, functions and benefits of manual, photocharging and automated circulation systems and a cost-benefit analysis of circulation system alternatives, the following activities were completed.

1. Made site visits and interviewed Head Librarians in PLS member libraries.
2. Worked several hours at the circulation desks of each PLS member library.
3. Attended PLS Board meetings and maintained contact with the PLS Director through telephone calls and site visits.
4. Gathered statistical data from the libraries 1978-79 Annual Reports, the California Library Statistics and Directory 1979.
5. Completed a time-and-work activity survey of fifteen circulation-control tasks and three catalogue-maintenance tasks. Full participation in all library outlets that are part of the Peninsula Library System member libraries was requested.

6. Wrote profiles of each member library. Met with Head Librarians to verify profile contents.

7. Held a group process workshop with PLS Board members and circulation staff members from the libraries. The intent of this workshop was to identify differences between the PLS member libraries, discuss a set of draft functional specifications for an automated circulation system and identify PLS member librarians' goals for proposed automation.

8. Developed information gathering charts for library circulation statistics. These charts were self-administered by the Head Librarians following instruction by the consultants.

This resulted in information describing:

1. The costs of existing system labor and supply costs.

2. Data describing the population served, circulation of materials, size of collections, days and hours of service availability, number of patrons, inter-library loan activity at the different levels (including PLS loan, inter-library loan with non-PLS members and loan activity among branches of one library) and other general information describing circulation activity, including library revenues from fines, overdues, lost and damaged items, reserves and other fee-generating rentals.

3. Detailed descriptions of current circulation systems.

4. An understanding of circulation tasks and catalog maintenance tasks.

5. Library staffs' impressions of different types of automated circulation systems.

In terms of library automation, research was completed by site visits to other libraries with automated circulation systems, meeting with a vendor representative, and through research in library journals and books, as well as information provided by the Senior Technical Consultant.

B. Consultant Roles

The Principal Consultant was responsible for the following:

1. Collecting and understanding information describing manual, photocharging and automated circulation systems, including the implementational steps involved in carrying out the activities, the major task breakdown and general time requirements for the implementation of the tasks.

2. Design and administer questionnaires to collect statistical data from the PLS member libraries.

3. Gather, compile and summarize data provided by the libraries.

4. Develop library profiles describing the circulation systems and their costs, as well as other cost and income data related to circulation activities.

5. Verify collected information through site visits at each library in meetings with Head Librarians and/or their representatives.

6. Take the lead in writing the final report.

7. Be the liaison between the Governmental Research Council and the Peninsula Library System.

The portion of the study requiring participation by the Senior Technical Consultant was to cover the following subjects, plus any additional subjects found necessary to include in order to explore fully the feasibility of systemwide automated circulation:

1. Review present circulation operations in member libraries, identifying deficiencies in present systems and improvements desired in a new system.

2. Assist in the determination of what changes and compromises in procedures and policies would be required to cooperatively automate circulation.

3. Describe how geographic and other characteristics of the system will affect automation of circulation and what problems must be solved.

4. Review potential types of automated systems which would meet system objectives, detailing advantages, disadvantages and estimated costs of each, including, but not limited to the following situations:

   - Alternative A: A single, large centralized computer system with a number of communication lines radiating from one central processing unit.

   - Alternative B: Two or more computers from the same vendor, linked by telephone lines to facilitate inter-computer communications.

5. If systemwide automation was not feasible, make alternative recommendations with attendant costs specifying both advantages and disadvantages for member libraries.

6. Assist in the development of a set of functional specifications that describe what the recommended system will do, arranged in priority order; give costs of such a system and a detailed analysis of procedures for implementation, with justifications.

I. INTRODUCTION

The Peninsula Library System (PLS) was started in 1970 to provide a framework for joint cooperative action among the public libraries in San Mateo County, California. Members include the seven municipal libraries and the County Library, whose combined services are available to all county residents. The eight libraries have joined together to provide reciprocal borrowing privileges for residents with library cards and facilitating interlibrary loans among PLS members, as well as reference coordination, centralized borrowing of 16mm films, mobile outreach services and the Community Information Project which maintains a computer file of human service agencies to provide information and referral services to the public.

PLS members use teletype machines, which are part of the private microwave communications network operated by the County government, to communicate interlibrary loan requests and other information among themselves. The PLS van provides regularly scheduled daily stops to each member, picking up and delivering materials. Patrons may borrow from and return items to any member library.

THE PRESENT

A statistical profile for PLS as a whole is presented in Exhibit 1 in order to illustrate the scope of circulation control problems. Presently the eight Peninsula Library System member libraries:

1. Have more than 30 library facilities including two bookmobiles operated by the County and one bookmobile operated by PLS for outreach services;

2. Offer over 586,000 residents access to over 1,750,000 volumes;

3. Employed 264.25 full-time equivalent staff members during fiscal year 1978/79;

4. Had a grand total of all library income of over $8,000,000 for fiscal year 1979/80 allocated to staff salaries, new book acquisitions, facilities maintenance, capital outlay, etc.;

5. Had a per patron circulation of 14.42 items per year during fiscal year 1979/80.

The PLS libraries are all local libraries serving the general public. The academic libraries located in the three junior colleges in the county are not PLS members. Within PLS, there is a notable difference between the size of libraries, the estimated number of patrons vis-a-vis the jurisdictional population, the per capita circulation, the size of the collections, and the per capita support for the library.

THE FUTURE

Within the near future, the PLS will face:

1. Slow or no population growth, estimated to be 3.3% from 1980 to 1985, although initial 1980 census data indicate a slight decrease in total population in the San Mateo area.

2. A changing clientele. It is projected that the average age of residents will increase and the households will generally be headed by single adults, with a decreasing youthful population. Because of the increased demand for single housing units by single heads of households, costs for housing will increase, driving the low and middle income families out of San Mateo County.

3. Increase in population per capita income. Economically, San Mateo County in self-sufficient, in that there are jobs available closely matching the jobs demanded by residents (though this does not mean that all county residents are employed in the county). Because of the proximity to

San Francisco and the internal variation of the geographical area, the County is a desirable place to live (94% of the County's population resides on the bayside corridor, leaving the coastside generally more open). There is also a significant percentage of the land designated as park land in the Santa Cruz mountains, as well as the beaches on the coast side.

Overall, the population is becoming wealthier on a per capita basis. The county is a bedroom community for San Francisco to the north and is adjacent to "Silicon Valley" in Santa Clara County. On the bayside corridor, the population is becoming more and more homogeneous, with the possible exception of Daly City. Daly City is adjacent to San Francisco, and has a varied population.

II. PLS COOPERATIVE PROGRAMS

While PLS members have developed individual circulation policies in the interests of their own patrons, the Peninsula Library System has joined together some operations on a county-wide basis, extending library services and resources to all county residents. This section will describe the cooperative programs and operations implemented by member libraries.

Systemwide Joint Operations

Every library honors cards issued by the other libraries within the system. A resident who has a card issued by his/her own jurisdiction may borrow any materials which do not have circulation restrictions. For example, South San Francisco Library does not circulate cassette tapes to non-resident cardholders, though a Menlo Park resident with a valid card may borrow a book from the South San Francisco Library. All public library card holders residing in the county are considered PLS patrons.

PLS patrons may also return items to any member library. A Menlo Park resident may return the borrowed South San Francisco book to Redwood City. PLS operates a van that visits each library every day, dropping off and collecting books and other materials. The van not only returns materials to the owning library, it collects materials being delivered from an owning library to a borrowing library.

PLS patrons have access to the collections of all PLS member libraries. If a book desired by a patron is not in the collection of the

resident library, then that library may, by request of the patron, check to see which library may have the desired material. First, one PLS library can loan to another PLS library, a PLS loan. Second, in a direct loan to a non-resident, a PLS library may also make a direct loan to a patron from another PLS library--this category is reciprocal borrowing by a non-resident. Finally, there is a third category of loan to a non-resident, interlibrary loan (ILL), which occurs to/from a non-PLS library and a PLS library.

While the printed collections of all PLS members are available to patrons through personal borrowing and PLS loans, the patron is required to adhere to the individual borrowing policies of the lending library. For example, any PLS patron borrowing a book from the San Mateo City Public Library has two weeks to read the material, plus an automatic renewal for an additional two weeks if the patron returns the book to the San Mateo Public Library. If the patron who came into the San Mateo Public Library to borrow the book returns that book to another PLS member library, then the original date due is honored, eliminating the automatic renewal, since other libraries do not have the same policy. The library where the item is returned will determine whether the automatic renewal is granted.

Because of the varying fine policies, grace periods for late books, and loan periods among the PLS libraries, a patron needs to be aware of the individual library policies. If a book is returned to a non-owning library with a fine due, then the patron has the choice of paying the fine immediately to the accepting library, or being billed by the owning library. The library that collects a fine usually keeps the revenue. If there are more

complicated charges, then the patron is requested to clear the record at the owning library.

Bibliographic Center (BIBCEN)

If a patron seeks a book which is not owned by a given library, then that library can request an interlibrary loan from another library within PLS. The requesting library sends a message via the teletype to the PLS bibliographic Center located in the County Library Headquarters to identify other member libraries which own the item. BIBCEN is the PLS interlibrary loan center. Requests are searched in the union file and the location of the item is returned to the requesting library via teletype. The requesting library then sends the request to the owning library for the item. If the item is available, it is sent to the requesting library via the PLS van.

BIBCEN will also search other resources for a title not owned by a PLS member. If the requesting library has determined that no PLS library owns the item and CATALIST has no record of the item, a request is sent to the State Library via TWX, one of two used for extra-system communications. The State Library is asked to search the California Union Catalog.

In addition to searching for requested items, BIBCEN verifies the interlibrary loan requests by assuring that the author/title information is correct and maintains the PLS union file of holdings. Currently, there is a conversion project underway to convert the PLS union file records for titles published after 1972 into machine-readable form (approximately

65,000 records). When the conversion is completed, a computer-produced microform file will be available to all PLS libraries. The microform file will give direct access to all PLS libraries information about these recorded holdings of the other libraries.

Film Center

The 16mm films owned by PLS members are located in the film center at the County Library Headquarters. The Film Center is responsible for booking, delivery, cleaning and repairing and maintaining all 16mm films. All libraries currently owning 8mm films circulate them from the individual libraries.

Patrons may pick up the film they booked from their local library or the film center as long as they have a valid library card from a PLS member library and are over age 18. A film catalog is available at all PLS libraries.

Mobile Outreach Services

PLS provides a van and staff to implement outreach programs designed by PLS members in their own jurisdictions. These programs serve hospitals, retirement communities, schools, convalescent homes, and other similar organizations by providing film programs, book talks, bookmobile stops, storytelling and other events developed by individual libraries.
In addition, PLS provides on-site library services to the men's and women's jails, honor camp, and work-furlough program operated by the

County Sheriff's Office.

PLS staff implement the outreach services by selecting and checking out the materials to be delivered to the receiving service. All materials are checked out of the library which designed the program, thereby including the circulation statistics in the owning library's annual figures. PLS does not maintain independent circulation figures.

Community Information Project (CIP)

The Community Information Project staff maintain a computer file of approximately 1,350 human service agencies serving San Mateo County residents. This computer file is kept updated to provide information and referral (I&R) services to the public. Information is available to the general public via the teletype system in each main library and nine of the county branches. A computer terminal is located in the San Mateo County Department of Health and Welfare Resource Staff office, as well as in the CIP office, making the information readily available to social service professionals throughout the county. Not only does CIP provide I&R services describing individual agencies, but it also fills requests for computer searches on specialized subjects. For example, a resident may request information describing all youth services in the county. This request will generate a comprehensive directory of resources about two inches thick listing hundred of services.

Reference Center

The PLS Reference Coordinator answers reference questions of member libraries that usually require more time or resources to answer than an individual library may have available. This individual acts as a regional reference librarian for the Cooperative Information Network (CIN), prepares union lists of reference materials, supervises BIBCEN, provides reference staff development services and acts as a resource for the PLS Reference Committee (a committee composed of the head of reference from each PLS library). A portion of the PLS budget is allocated to the purchase of reference materials that supplement and strengthen collections of member libraries.

PLS Committees

Committees representing the primary library functions, e.g., circulation, reference, are made up of staff from the member libraries. They meet to plan and evaluate the activities and programs of the system.

Delivery and Communications

Pickups and deliveries are made daily to every main library. The PLS van collects materials from each stop and delivers those items that have been designated for each library. The collected materials are taken to the County Library Headquarters, sorted, and organized for delivery to the appropriate destination the next day. In this manner, materials which have been dropped off at a non-owning library, PLS loans, films and any other item

for delivery is set up for the appropriate location.

PLS uses teletypes belonging to and paid for by the County Library, which are operated on land-lines to the nearest microwave station (usually police or fire). These machines are distributed to each main library, nine county branches, BARC and BIBCEN. The Reference Coordinator and BIBCEN have TWX machines to communicate outside of the county. PLS contracts with San Mateo County for microwave communication service and maintenance of the teletype machines.

Summary

The Peninsula Library System has several operations serving all PLS members. This cooperation provides county patrons with access to larger collections, the convenience of using any local library and the provision of special services to the population groups who may not be otherwise served, especially in light of budgetary cutbacks resulting from Proposition 13. However, within the cooperative system, each library has maintained its individual circulation policies and implementation practices.

III. CURRENT PLS CIRCULATION OPERATIONS

Within the systemwide operations, each library has its own circulation policies and procedures. This section will identify the various types of circulation systems currently implemented in PLS member libraries.

Circulation Systems

Currently six different charging systems are used by the PLS libraries. The County Library and Redwood City Library use the hand charge method in their smaller branches, requiring the patron to sign the bookcard and leave it in the library. South San Francisco uses the manual Gaylord system.

Daly City is currently using the Gaylord system in its main library and three branches. The Gaylord system uses a machine to stamp the patron number and date due on the bookcard, which remains in the library. A date due slip is placed in the book pocket for the borrower's information. A special library card is necessary to be able to take an imprint of the patron I.D. number off the patron's library card. The card has a metal plate embossed with a unique patron number.

The Burlingame Library uses the manual Dickman system. Again, the bookcard remains in the library when an item is checked out, providing the library with increased control over its collection. The Dickman system also stamps a patron number and date due on the bookcard, which requires a different type of library card from any other library within PLS, in this case, plastic with an embossed number.

San Mateo City, San Mateo County, Redwood City and Menlo Park use the Brodac photocharge system and San Bruno and the County Library bookmobile use the Recordak photocharge system. Both of these methods send the bookcard out with the book and a Transaction Card (T-card) in the book pocket. The use of T-cards is important within these systems because each card actually represents a material on loan. Depending on the circulation system, T-cards may have a number assigned to them and are generally distributed in sequence.

Six of the PLS libraries use only one charging system for all branches (two libraries have no branches) and two use multiple charging systems. Of the six libraries, two use Brodac and the remainder use either the Kaiser, Dickman, Recordak or Gaylord. Hand charge systems are used as second systems in the smaller branches of the County Library and the Audio-Visual Center of the Redwood City Library. The County Bookmobile uses the hand charge system at smaller stops where electrical outlets are not available to plug in the Recordak machines. Some libraries also use the hand charge method to check out interlibrary loans.

PLS Circulation

During FY 1979/80 the County Library System, the largest library in the county with 12 branches and two bookmobiles, accounted for 30.2% of the county's total public library circulation. Daly City followed with 16.4%, the City of San Mateo with 12.3%, Redwood City with 12.4%, Burlingame with 9.9%, Menlo Park with 7.5%, South San Francisco with 7.4% and San Bruno with 3.9% of the total PLS circulation.

The County Library serves all areas not served by the municipal libraries. These areas are a combination of cities and sparsely populated communities, mostly on the coastside and in the Santa Cruz mountains. Communities that do not have branches are part of the bookmobile route.

The borrowing population of PLS materials is primarily within San Mateo County. Exhibit 3 displays the results of the Direct Loan Survey taken two weeks each calendar quarter to determine the origin and volume of materials loaned. This survey is used to set the level of reimbursement to PLS libraries from the State Library for direct loan service to non-residents. Interlibrary Loan (ILL) to non-PLS members is insignificant, less than 1% of the total circulation. Closer examination of exhibit 3 shows that four libraries recorded that 90% or more of their materials borrowed were taken by residents from their own community. The other four libraries show a range of 75% to about 85% of the transactions from their own residents. The exception is Menlo Park with a PLS circulation of 42% projected for the 1979/80 fiscal year. While there does not seem to be heavy ILL activity with libraries outside of PLS and San Mateo County, the major part of extra-library activity occurs among the libraries within PLS in the form of PLS loans and Direct Loans to Non-Residents.

Circulation System

Of the circulation systems currently in use, the Brodac system checks out about 54% of the materials circulated throughout the county. Now that South San Francisco has completed its conversion to the Gaylord system, 24% of the materials are checked out by that system.

The Dickman system circulates 10% of the borrowed items. This is followed by about 7% of the items checked out by hand charging and 5% checked out via Recordak machines.

Though slightly over half the materials are checked out by the Brodac method, there is diversity within the use of the Brodac method by different libraries. Two libraries needle-sort the T-cards and one other library has the T-cards sorted by the city's data processing center into numerical order. The fourth library using Brodac hand sorts the T-cards into sequential order.

Therefore, there is diversity not only among the systems, but also in how the same type of circulation system is used. The two libraries using the Recordak machines use different T-card systems. Most of the libraries have, over the years, developed their own daily procedures which differ among the libraries.

Since the passage of Proposition 13, PLS libraries have experienced an increase in items circulated per hour of service of 18%, though overall circulation figures show a decrease. This decrease in circulation is probably due to the number of available public service hours, which were 1,772 before Proposition 13 and were 1,112 hours per week during FY 1978/79.

Circulation Summary

The following summarizes the current circulation implementation within PLS:

- There are almost as many circulation systems as there are libraries within PLS.
- A majority of library circulation activity is within each member library.
- Loans to PLS patrons account for approximately 20% of the circulation transactions within the county--i.e., direct loans to non-residents and PLS loans (ILL among the system).

Circulation Policies

Diversity within PLS is also shown in the circulation policies. Over the ten years of PLS membership there has been an effort to unify these policies, but to date, wide variation continues to exist among the libraries. However, in anticipation of San Mateo County Library's present efforts to obtain an automated circulation system, the PLS board is now addressing this issue and has already met to specifically discuss it.

Loan periods vary from 7 to 21 days. The renewal policy differs among libraries. Libraries have limits within different types of collections of how many items may be borrowed at one time. Though most libraries have instituted a 10¢ per day fine per item for overdues, there are variations among the fines charged and the types of materials that are fined.

If a PLS systemwide circulation system (whether automated or not) were to be implemented, it may provide an impetus for a detailed examination of these individual policy decisions and the formulation of common policy. Since the member libraries participate in shared borrowing and lending to all San Mateo County residents, these residents are now faced with a confusing multiplicity of library policies.

Automated systems have technical and economic limitations. In order to realize the potentials of automation, member libraries will be required to reduce the amount of diversity in loan periods, fines, reserves, etc. Basically, circulation control policies should have a limited set of options in order to keep the system responsive to necessary circulation transactions and to minimize any special programming that may be needed to accommodate PLS circulation control policies. Among those policies needing increased standardization are: daily fine charges, limits on fines, notification of overdues, borrowing privileges attached to different types of collections, renewals, loan periods and renewal process (i.e., telephone, mail or drop-in). The resolution of these policy issues is properly the domain of PLS member libraries.

It is important to emphasize the role that management should exert in selecting both policies and technologies that are consistent and coherent with the specified circulation control system objectives. These objectives are presented next.

IV. PLS PROBLEMS AND OBJECTIVES

The objectives for improved circulation control systems among PLS member libraries are presented in this section. To provide a context for these objectives, the problems inherent with the existing circulation control systems found in member libraries are first identified. Secondly, the effect of these problems on the proposed cooperative PLS automated circulation system is discussed.

Problems

Within PLS libraries, there are two main problems regardless of the circulation system employed: 1) locating specific titles and 2) processing overdues. Other problems include maintenance of patron records, trapping delinquent patrons, processing snags and manual procedure errors. It is important to note that the features of automated circulation systems closely address the problems found in the existing manual and photocharging circulation control systems.

Any kind of technology implies two kinds of related procedures which may create problems. Several technology dependent procedures can act as constraints, e.g., time required to use up and develop film in Recordak photocharging system, sorting T-cards into numerical order so as to implement the overdue item identification procedure, or tracking patrons through stamped numbers on bookcards. With Recordak systems, for example, some time must elapse before the preparation of overdue notices can begin. This time is dictated by the film developing time and the length of time

that it takes to use up one roll of film. If the decision is made to process only 100 foot rolls of film, and the circulation volume is low, then the overdue notices cannot be produced until the roll of film is full and is developed.

There are discretionary procedures that must be decided by the library as well as technology dependent procedures, e.g., the amount and timing of overdue notices are discretionary procedures. Delays in sending overdue notices may increase the number of items unreturned to the library. Sending overdue notices without giving the patron a grace period in which to return overdue materials maximizes the library's postage charges. Actual problems experienced by a library thus are a combination of technology dependent and discretionary procedures.

In addition to the intra-library procedures, all member libraries cooperate in PLS activities. Therefore, libraries need to check not only their own delinquent borrower list, but also that of other member libraries before releasing materials. Because of the varying timing and numbers of overdue notices sent by different members, patrons may be allowed to borrow items from neighboring libraries for several weeks before being stopped by one member because of excessive overdues.

Since patrons may return materials to any PLS member library, the actual date of return to the owning library may be several days after the item has been dropped off at another PLS library. An overdue item returned to a non-owning library after the overdue notice has been sent but before the invoice has been mailed will be accepted. The patron may

pay the fine to that library or be billed by the owning library. However, if an invoice has been sent to the patron, the record must be cleared at the owning library. Although there is PLS borrowing among member libraries, patrons are sometimes sent in person to the library owning the desired item.

Other problems include locating a requested item for a patron. Though it may be known that a neighboring library owns a book requested by a patron, that book may be charged out. Because of the design of some of the current circulation systems, the location of a requested item may not be known for several weeks.

If the PLS member libraries were to unify their discretionary policies, it is possible a reduction in costs and problems would follow. Benefits would include increased patron trust of the cooperative procedures between the libraries.

Objectives

The following identifies requirements for the application of minicomputer and communication technology to the automation of circulation control activities both between (inter) and within (intra) libraries.

PLS Loans and Direct Loans to Non-Residents

Within PLS, there are two types of intra-PLS loan activity. One is the PLS loan when member libraries borrow print and non-print items from one another requested by their patrons. The second type is

the direct loan to a non-resident when the patron directly borrows an item from a PLS member library other than his/her local library, e.g., a Menlo Park resident walks into the Redwood City library and borrows a book. These two types of loan procedures may also become commingled by the patron's home library searching for a book, then suggesting that the patron go to a neighboring library to collect the item, rather than going through the interlibrary loan procedures and having the item sent to the requesting library.

To increase control of the collections and have a clearer idea of the demand for the materials and their movement among PLS libraries, automation of inter-library activities provides immediately available information about requests, holds, circulation of print and non-print items, and identification of delinquent patrons. Therefore, PLS specifications for inter-library activity should require:

- Capability to determine ownership and status and place holds (subject to certain controls) on items owned by the owning library or other member libraries.
- Determination and updating of patron status for all member libraries.
- Identification of items borrowed directly by PLS library patrons, as distinct from individual loans to a library's own patrons.
- Providing for overall control of, and reporting on, the level of inter-library activity.

Intra-Library Activities:

The automation of intra-library activities relates to the handling of patron and technical service functions that are part of circulation

control within a single library. For inter-library activities to be workable on a systemwide basis, the member libraries should automate their internal procedures as well.

There are several key objectives of any proposed system serving individual PLS member libraries: 1) better service to the patron and 2) increased service to the patron, as expressed by increased information about the library's collection and delinquent patrons and overdue materials. Specifically, questions to be answered include: Is a particular book available for loan? Is it checked out now? If so, what is the due date? Does a patron requesting the book have currently unpaid fines and overdues?

Inherent in these activities are corresponding complementary objectives to reduce the amount of time spent on clerical tasks and their commensurate costs. PLS librarians have noted that significant amounts of time are spent on the processing of overdues and the collection of fines from patrons, in addition to processing requests for holds and trapping requested items for patrons. They wish to reduce the amount of time spent processing overdue notices, preparing fine notices and screening holds when items are returned. In addition they wish to collect statistics on use and eliminate errors inherent in manual procedures. The activities recommended for automation, based on the capabilities of existing automated systems, a review of the data, discussions with PLS librarians and visits to the libraries include:

- Identifying items, borrowers and circulation transactions
- Registering borrowers

- Check out/check in of items
- Processing overdues
- Controlling delinquent borrowers
- Renewing items
- Collecting and recording fines
- Establishing holds and trapping items when returned
- Facilitating the preparation of statistics
- Providing current information for all inquiries
- Improving security

If PLS member libraries come to agreement on discretionary circulation policies, and, as much as possible, create a shared circulation system, then the implementation of the currently defined joint activities would be part of a county-wide effort to control materials and patrons on a regional basis, at the same time building internal control for each participating library.

A complement to the shared circulation system would be the use of an on-line cataloging system. At the present time, there is an effort to place all PLS member holdings published from 1973 to the present in machine-readable form so that all PLS libraries will know each other's holdings. While a computer output on microform (COM) file would display all PLS member holdings without having to go through the Bibliographic Center, the microform PLS union file would have to be constantly updated to include new materials as they are cataloged. Assuming patrons would have access to the PLS union microform file to search for materials they wish, then the COM file would require the purchase of appropriate microform readers.

However, without the addition of such data elements as Dewey number, this COM file could not be considered to be a COM catalog, duplicating or replacing the present card catalog.

If a union catalog of all PLS holdings were available on-line in each library, both staff and patrons would be able to retrieve quickly the desired information, rather than using a COM list that would only be current as of the time it was produced. With the bibliographic data and status information (location and status, e.g., checked out, lost, on shelf, etc.) readily available, patrons would know the location and status of the desired items.

An additional benefit to accessible on-line holdings information would be the possible addition of the PLS Community Information Project data base describing the social services available to the public. At the present time, this social service information is only available to the public via the reference librarian, who uses the teletypes located in each PLS member library. As the teletypes are unavailable for general public use, and the reference librarians are not overly familiar with the social service resources serving county residents, this service appears to be underused, in terms of its potential. However, since the CIP file relies very heavily on Boolean operators for searching and heavy text editing on SPIRES/WYLBUR--and no existing circulation system software has anywhere near those kinds of capabilities, CIP searching is likely to continue in its present mode for quite some time.

Summary

An improved method of circulation control among PLS libraries could benefit both PLS member libraries as a shared system and the libraries individually. The main problems described by the librarians were locating specific titles, processing overdues, and trapping delinquent patrons. On a systemwide basis, trapping delinquent patrons is a concern because any patron with a valid library card from a PLS member library may check materials out of any member library. Because overdues are processed with different speeds among the libraries, and no patron is placed on the Delinquency List until excessive abuses have been identified, it is often difficult to identify and block the patron who has failed to return a number of expensive materials from different PLS libraries. Because of the delays involved in sending a delinquent patron's account to the credit bureau for collection, there currently is no way to prevent continued use of the PLS libraries by patrons who abuse their borrowing privileges.

Circulation control is needed both between the member libraries and within the individual libraries. Because of the shared borrowing policies of PLS libraries, both areas need to be addressed. The libraries have agreed on the basic functions of an automated circulation system, though concrete specifications were not clearly defined for a cooperative PLS basic circulation system. The following points should be noted:

- Circulation between member libraries involves relatively complex processes which at present are not documented in detail. If automated, the activity would involve a high degree of data sharing across member libraries in order to determine the pattern of use of each collection.

- Circulation between member libraries could be made subject to a number of management controls including:

  - Designation of material categories, individual titles and/or copies as circulating/non-circulating between member libraries.

  - Decision that any item on inter-library loan between libraries must be returned to the owning library before being subsequently loaned.

  - Monitoring of both item requests and circulation activity involving PLS libraries, by material category, location, etc.

  - Monitoring of ILL requests and circulation activity from libraries outside PLS.

- Circulation control system functions within and across member libraries involve demanding performance requirements--two to five second computer response times for circulation transactions would be mandatory.

V. CIRCULATION CONTROL ALTERNATIVES

Three methods exist to assist libraries in controlling their circulating collections:

1. Manual systems,
2. Photocharging systems, and
3. Automated systems.

Each of these methods has specific advantages and disadvantages, and requires different degrees of staff effort to perform basic circulation control activities. This section provides a brief overview of the comparative strengths and weaknesses of each method and subsequently, identifies and discusses in detail the options for PLS in terms of automated system alternatives.

Manual Systems:

A number of manual systems, some aided by machines, have evolved over time to assist libraries in coping with increasing circulation. Traditional manual systems include the Dickman system, the Kaiser (Wayne County) system and the Newark charging system (which further includes the Gaylord Model C, Demco Charging System and the Sysdac equipment). These traditional library circulation control systems are evident in the PLS libraries. Of the eight participating libraries, five use a variation of the manual method as their sole circulation control system or in some of their branch libraries.

Photocharging Systems:

The photocharging method permits quick charge out and is generally used in libraries with a fairly high circulation activity level. Photocharging systems include the Recordak and Brodac systems. Seven county Library branches, the County bookmobiles and four PLS member libraries use this option.

Automated Systems:

Automated circulation systems check items in and out within seconds, and have the capacity to record and trap holds, identify overdues, print overdue notices, maintain patron records, flag delinquent patrons attempting to borrow items, and produce management information and statistical reports. In the case of a shared system, or a library with several branches, it can eliminate the need for teletype and some telephone communication between the libraries to determine item's availability and can provide immediate information identifying patron status.

Advantages and Disadvantages:

The circulation function in libraries is of primary importance because it records who is eligible to borrow materials and what materials have left the premises. Exhibit 4 displays the advantages and disadvantages of the three major types of circulation systems: manual, photocharging and automated. All circulation systems circulate and maintain control of library materials, generate information for at least limited statistical

reports and provide a basic core of collection management activities.

Manual systems are low cost in terms of initial equipment cost and continuing equipment maintenance costs. However, because of inflation, supply costs for a manual system are rising dramatically. Continuing staff costs are significant for manual systems. The number of staff available determines how quickly the activities can be carried out. But, when a large number of people are involved, more human errors are likely to occur, which in turn requires increased staff. Finally, management information describing use of materials, immediate identification of delinquent borrowers, and status information describing an item are not readily available with manual systems.

Photocharging systems are able to charge out items quickly, so are likely candidates for libraries with high circulation. Some manual card files required by the manual system are not needed by the photocharging system (e.g., book cards retained at check out in a manual system). Cost of supplies, equipment and maintenance are relatively low. Disadvantages with this option are that, as in manual systems, there are high staff costs, lack of collection control, time lag in identifying and processing overdues and delinquent patrons, and difficulty in identifying holds. Usually, in this method, the book card goes out with the item, so there is no ready way to identify what is in the library and what is out, until the item is overdue and a notice is prepared. In contrast, in the manual method, the book cards are kept, but to find an item, staff must go through each group of cards (which are filed either by date due, author or title, depending on the filing system used) to find the status of an item.

In sum, the major disadvantages of the manual and photocharging systems center around continuing high staff costs, high error rates in manually filing records and processing overdues, and difficulty in identifying holds and delinquent patrons, producing statistical reports, and determining the status of an item. Staffing costs usually increase proportionally to circulation increases. Since the passage of Proposition 13, circulation in PLS libraries per hour of service has increased 18%, thus likely increasing staff costs. Also, cooperative borrowing privileges and shared programs add variations in procedures and increase the likelihood of error among the member libraries.

Automated systems can eliminate many of these problems. Advantages include a potential for maintaining or lowering staff costs, increasing control over patrons and collections, automatically producing overdue notices ready to mail to delinquent patrons, handling high circulation volume, handling item status information and determining other libraries' holding and patron information. These systems can provide efficient access to a variety of information about library operations, identify the borrowing activity of various collections and can support such functions as inter-library loan between several libraries, both within and outside a shared system.

Disadvantages to automation include the initial expense in investing in costly and sophisticated equipment that must be set up in a specific environment and physical plant, and in higher equipment maintenance costs. Libraries considering the implementation of automated systems should gather the support of the library staff in the conversion effort. Conversion of

patron and bibliographic records to machine-readable form will be necessary, time-consuming and, to some extent, ongoing. Within a shared system, member libraries will need to come to agreement on loan and fine policies.

Currently, the PLS libraries use both manual and photocharge circulation systems and none has an automated system. The San Mateo City Library is in the process of setting up its own in-house automated system, while others are exploring the idea of automation. The remainder of this report will focus on an explanation of automation, a differentiation between the types of systems on the market and options available to PLS.

What the Computer Needs in its Data Base to Carry Out Circulation Functions in a Library

The basic functions desired by PLS librarians in an automated system include increased speed of check-in/check-out procedures, the ability to easily establish and trap holds when items are returned, and the production of overdue notices.

Those libraries deciding to automate will need to develop a list of functional specifications, delineating in detail all actions required by the system(s). If more than one library participates in a system, then inter-library circulation policies will need to be made more uniform, for example, loan periods, daily fines and grace periods (for items returned after the stated due date). Basic information required in the data base includes descriptive bibliographic information (e.g., author, title, publisher), item specific holdings information (e.g., name of library,

location in library, barcode number), and patron data.

Absence and Inventory Systems

Absence and inventory systems differ in the amount of data used to describe the library's collection and how long the data is maintained. Whether using an absence system or an inventory system, the bibliographic data base needs to have a record of any item owned by the library which is loaned to a patron. In an absence system only the items checked out of the library are recorded, as is common to the photocharge systems. Automated absence systems eliminate the manual filing and preparation of overdues but are unable to expand on traditional circulation activities in other areas (e.g., to produce management reports regarding use of items). An automated absence system can be more time-consuming and expensive than a manual system.

In an inventory system, bibliographic data describing all the library's holdings is in the data base in machine-readable form. More storage space is needed to maintain the data. The inventory system maintains a permanent file of all holdings in machine-readable form. Both systems require that patron information be placed in a data base to identify the borrower. When both patron and bibliographic information are available the library may be able to generate a greater variety of statistical and managerial reports, describing patron use of the library and which items are most in demand by patrons, trapping holds, and identifying delinquent patrons.

For the remainder of this report, absence systems will not be

considered. Though inventory systems may cost more than absence systems because of the need for additional mass storage in the computer, they are more beneficial because of the variety of additional information available to the library.

Types of Automated Systems

There are two major types of automated systems available to libraries: off-line (batch) and on-line. Off-line or batch systems are limited in that data cannot be processed by the computer as transactions occur. On-line systems permit data processing to occur within essentially an instantaneous turnaround or response time period (e.g., two to three seconds to retrieve a patron's record and check out the desired item).

Batch

These systems have been common in business and government. They generally require periodic transportation of cards to a central site, which would be quite problematical given the circulation volume of PLS member libraries. Turnaround time (i.e., the time in between time of charge or discharge and posting this transaction to the file) can be as long as a day or more. As a result, current information on item status and availability, and the ability to instantly access information on patrons and the author/title bibliographic files would not be available. In addition, these systems typically require large amounts of output in the form of paper listings or microfiche that can be difficult and expensive to handle.

A second type of batch computer system is the Data Collection Front-End System. Circulation information is collected by a data capture device or a local small computer. This information is then sent, often on magnetic tape, to a large batch system for processing. The primary difference between this system and the batch system described above is that the movement of cards from the library to the central site is eliminated. Otherwise, this system is in many ways as limited as the previously described batch system. The front-end system would require the transport of transaction tapes and materials on a daily basis. Generally truncated data is used in such a system and the library must still resort to manual look-ups to respond to patron inquiries. Both types of batch systems require large mainframe computers and off-site processing.

On-Line Computer Systems

In these systems, data is accessible to the library staff within seconds, eliminating the need to wait hours or days for a printout listing delinquent patrons, availability of materials, a particular item's status or trap a hold as an item is returned. These systems are characterized by having one or more dedicated computer processors and associated memory and communications equipment serving the needs of the library or libraries. Within the types of computer systems, libraries may develop their own stand-alone dedicated on-line computer systems, they may share an on-line computer system with other governmental departments within their municipalities or they may purchase a commercially available "turnkey" dedicated on-line system.

Libraries creating their own systems may discover that the system becomes more expensive than originally anticipated. Usually, the components have never been tested or used in the form developed by the library. In addition, this system would require the services of at least one programmer. This approach is not recommended because of its potential expense in terms of time and money.

A second type of on-line system is one shared by different organizational utilities, e.g., a city computer serving various city functions, such as payroll, accounting, police and fire departments as well as the library. Again, in this type of system, the library may need the services of a programmer working specifically in the library's interest. Problems may occur if access priority to the system is not clarified between the library and other organizational utilities. Participants in this type of system should be aware of the need to make clear contracts with the host city/county computer to ensure adequate priority for library services. In addition, there may be more computer down time because of the multi-program demands on the computer. The reliability of the central processing unit (CPU) may be lowered as a result of the multiple activities the computer is expected to operate simultaneously.

"Turnkey" dedicated on-line computer systems are the type currently offered by most of the library automation vendors. These systems are sold to support library operations. A "turnkey" system is one purchased from a vendor that is ready to use by the customer. Hardware and software have been tested and/or used by other customers, establishing a track record of reliability. Bugs in the system have been defined and are usually

rectified by the vendor.

On-line systems dedicated to library usage have the following benefits:

- Use of these systems requires very little computer experience, and does not require that the using agency develop a computer department.
- They are available from several sources, each offering a range of features.
- They are a proven approach to meeting the library's needs, and can be acquired quickly (six to twelve months) and easily, if resources are available.
- The systems are designed to quickly handle the large volume of transactions that will be initiated in the library environment.

Within the stand-alone on-line system design, two alternatives are considered. They include:

- Alternative A:

  A single, large centralized computer system with a number of communication lines and terminals radiating from one central processing unit (CPU). All or a few of the PLS member libraries could participate in this alternative. Non-participating libraries would continue to use the microwave communication system, or to participate in a communications/PLS loan mode but not a circulation mode. This alternative is often called the star configuration and is illustrated in Exhibit 5.

- Alternative B:

  The second alternative involves the use of two or more computers from the same vendor, each designed to meet the needs of one member library or a group of member libraries. Each of the computers is linked by telephone lines to facilitate inter-computer communications. This alternative is called a ring configuration and is shown in Exhibit 6. Each particular library's data base is stored in "its" computer. Because a majority of transactions will be interacting with the local

data base (e.g., circulation, holds, etc.), there is a limited need to access data on the other computer. However, should that need arise (e.g., for loan to another PLS library and for ILL), then the communication paths are available. The necessary equipment for this alternative should be identified and planned for in advance through the Request for Proposal process. This computer-to-computer communication is significantly different and simpler in use than the dial-in telephone capability (library-to-library) that currently exists in some shared circulation systems. The communications link is maintained at all times and should an inquiry be unsuccessful in the "local" computer, the inquiry is automatically routed to another computer. When the message from the second computer returns, the results are routed to the appropriate terminal.

Variations within Alternative B include the participation of some member libraries, but not all, requiring the continued use of the teletype communication system currently in use among PLS member libraries, and the use of different computer systems. Complications exist when the necessary computers at the nodes in the ring configuration are acquired from different vendors. The application program at one computer may be different than that from another computer. Somehow these different programs need to be able to communicate with each other. In this case, a "standard" circulation system communications interface is mandatory.

Advisability of Automation

Among PLS member libraries, there has been some discussion of automating the circulation function. The San Mateo City Library is currently planning to utilize a portion of a new computer recently purchased by its city to replicate a system from Georgia, but not on precisely identical equipment. The only documentation made available by San Mateo City Library for this study is shown as Appendix G. The City Librarian expects to have the system ready by late 1981. Burlingame and San Bruno city libraries are considering either automating or improving their current manual circulation systems, and are interested in exploring other resources that may be available. The South San Francisco City library recently converted from the Kaiser system to the manual Gaylord system. The Menlo Park City Library and the

San Mateo County Library are exploring the feasibility of automation, whether or not other PLS member libraries participate. Redwood City and Daly City libraries are interested in learning more about automation. Thus, seven of the eight PLS members have evinced interest in an automated circulation system, in particular the system being considered by San Mateo County Library. Only San Mateo City Library is presently committed to another approach.

At this point, there are four options available to PLS member libraries for their consideration:

1. Shared use of three city computers.
2. Two or three libraries purchasing stand-alone, on-line dedicated library circulation systems.
3. A single dedicated library circulation system that is shared but with limited participation.
4. A single dedicated library circulation system that is shared with full participation of all eight PLS member libraries.

The four automated alternatives are reviewed here for their technical, managerial and economic issues.

Shared Use of Three City Computers

The San Mateo City Library is planning to utilize a portion of the computer recently purchased by the City of San Mateo. The library will use software obtained from another library (in Georgia). The City of Menlo Park is planning to purchase a computer and its city library will

have the opportunity to share in the use of that computer. If a city in the northern part of the county were to purchase, or currently had the capacity to include library use, then the three areas could potentially band together to provide a cooperative shared system for the entire county.

Under this concept, an interface would be required so that the libraries using each computer would be able to communicate with libraries on a PLS system-wide basis. Not only would the cost be significant to develop the interfaces, but the question would arise regarding who would pay for these inter-computer linkages, including both the development and maintenance costs.

A possible benefit to this type of system could be the initial cost. Although sharing equipment costs with several other city departments, it would be necessary to hire one or two programmers to address the libraries' specific needs, for at least one year. This cost would be approximately $20,000 a year per programmer, including benefits.

While this concept has the possibility of using existing resources within the county, there are some specific concerns that would need to be considered. Though a city may promise adequate computer capacity to its own city library, there is no assurance of sufficient capacity to support additional libraries from other jurisdictions. Since the computer would be responsible for processing multiple types of activities simultaneously, the amount of on-line time may not be as uniformly available as would be needed for libraries, assuming on-line processing would be possible with other library users. In addition, there is the issue of data processing

priority for the participating libraries and the clarification between on-line and batch activities. For example, if payroll needed to have sole use of the computer for a four or five day period, when would the overdues be printed for mailing? Would there be some kind of back-up system to store data until the computer was ready to accept the libraries' load again? How would the dumping of the temporarily stored data, plus the daily input, plus the activity of the other departments affect the capacity of the computer to keep up with its varied programs?

Another concern lies in the development and use of the data base. It might be difficult for the libraries to develop a standardized communication procedure that will allow the application program from one computer to be used on another computer. Even if the libraries were able to develop a standardized data base, because of the different computer architecture, different programs may be necessary to use the same information.

If PLS member libraries were to divide geographically into three groups, each using a city computer, then the County Library would be split into three sub-groups, depending on the geographical location of its branches. This division will result in a split of the County Library's data base and circulation records, with a corresponding likelihood of problems. In addition, the libraries' priority for on-line services would have to be clearly defined and consistent with all three cities. The capacity of the computers would have to be sufficient to handle several libraries, rather than just the owning city library. In light of these potential problems, this option is not recommended.

Two or Three Libraries Purchase Stand-Alone On-Line Dedicated Library Circulation Systems

In this option, libraries able to purchase their own computers would automate their circulation systems. The other PLS libraries would continue to use the teletype machines to communicate with one another and with the computerized libraries. Within each computerized library, the system would be more reliable than the use of city computers because the circulation system would be dedicated to library use only.

Again, the libraries with their own systems would need to have interfaces between the systems in order to communicate with each other, unless they continued with the existing teletype communications between libraries. Additional costs for each library to go on its own would include the computer and disc drives, software plus 400 to 500 square feet for a computer room. The computer room would need modifications for air conditioning and electricity and a computer operator for each system.

In addition to costs to develop and maintain the physical location for the computers, conversion costs would be higher, since each library would be placing its own bibliographic file on its own data base, instead of creating a data base of the PLS union file. That is, duplicate holdings would be put into the data base separately, up to several times, depending on how many libraries with computerized circulation systems owned the item. If one or more libraries decide to go their own way in circulation automation, then decide later to join in a shared system with other PLS libraries, there would be added expense in terms of conversion of items and the data base for use in a shared system.

In summary, if two or three libraries purchased and installed computerized circulation systems independently, the cost would be considerably more expensive for each library than a shared system. Using dedicated systems for library functions would lower the risk of down time and loss of priority on-line. There would be no sharing of data, at least between the libraries that had computers and those that did not. The current teletype system would need to be continued. Automated libraries would continue to manually check out PLS loans, unless they included a non-owned item in their data base. If the automated libraries wished to talk with each other via computer, interfaces would be necessary, with the attendant question of who pays for the interface and where the interface can be obtained.

Shared System: Limited Participation on One Computer

This option would join those libraries who wish to participate into one shared system. Those electing not to participate would probably communicate with the participating PLS libraries via teletype. At this point, potential participants in a limited shared system include all PLS members except San Mateo City Library. Several of the PLS member libraries already have capital outlay funds approved in concept for participating in a shared system.

Advantages to this type of system would be felt not only among the libraries, but also among the PLS patrons. Benefits from a shared data base include improved PLS loans and ILL and a partial elimination of the existing teletype system. Patrons would be offered some consistency between

the libraries when borrowing from these participants, with possible standardization of fines, dates due, receipt of overdue notices, etc.

It is possible that the other PLS libraries would wish to participate in the system at a later time. Therefore, the original purchasers may want to keep in mind the ability to accommodate growth. Unless future growth is considered now, it may cause increased dollars and disruptions later.

Initially, the start-up costs for the limited shared system would be lower total costs, but about the same per-participant cost than if all PLS member libraries bought into the system at once. One advantage to using one shared CPU is that there would be no need for a computer-to-computer interface because there would be only one computer involved.

Instead of each library purchasing its own computer, participating libraries would pay incremental costs to increase the size of the central processing unit (CPU) and disc space. The cost for one shared system would be less than the total costs for CPUs and discs in three libraries or three cities. Sharing one computer system would also eliminate the cost of special environmental conditions and computer operators in several locations.

An additional benefit would include the potential for purchasing, with relatively small incremental costs, an on-line catalog. Adoption of this option would give most PLS member libraries access to the potential benefits of an automated circulation system. Compared to individual automated systems, participating member libraries would have lower conversion

costs, more immediate knowledge of collections and patrons of participating libraries and access to more management information describing collection usage, etc.

Shared System: Full Participation by All PLS Member Libraries

If all the PLS member libraries decided to purchase one stand-alone, on-line dedicated computer system, then the maximum potential benefits would be realized. There would be no need for continued use of the teletype machines in any PLS library for inter-PLS transactions, conversion costs may be lower because all patron and bibliographical information would be converted into a common data base at the same time and only one computer operator might be needed at a central processing site to handle the necessary changes in paper/forms on the line printer, coordination, etc. Overdue notice mailings could be prepared by the system in zip code sequence for all libraries using pre-printed forms that need only be delivered to the post office. No staff would be needed for envelope stuffing, sealing, affixing postage, etc. There would be less potential of disrupting an entire system with new participants. All the libraries would be able to communicate via the computer, facilitating PLS loans and ILL activities. Since one computer would be serving all PLS member libraries, there would be no need for interfaces among several computers.

The most significant disadvantage to the development of a fully shared system would be the initial startup costs. Given the size of the required system, which would require 76 terminals dedicated to circulation only and a large central data base, the cost would be significant (see

appendix C for source of terminals and data base requirements). While this approach is subject to service interruptions (down time), experience to date suggests that PLS member libraries could expect available up time to be in excess of 98% of scheduled time.

When the computer is down, back-up systems are available to accumulate data until the computer is functioning. There are three types of back-up systems: 1) a manual tally of patron and item ID numbers which are entered by hand after the system is back in operation; 2) portable terminals which capture circulation transaction information for subsequent input to the computer; and 3) a microcomputer which can support up to four circulation terminals and which forwards all transaction data to the minicomputer when the system is again operational. The choice of back-up system is up to each library.

Options and Alternatives for Automation

Automating the circulation systems of the PLS member libraries can provide many procedural and management related benefits for the libraries. Suggested options for PLS member libraries would be the use of a single dedicated library circulation system shared by all or some of the PLS member libraries, or the purchase of two or more stand-alone, on-line dedicated computer systems, where some libraries may use one computer and others the second computer, third, etc. Up to this point, Alternative 3, each library doing its own thing, and Option 1, PLS member libraries sharing in the use of three city computers, have been rejected as too expensive and high risk.

In this study, two alternatives cover the three suggested options in developing the automated circulation systems for PLS member libraries who may wish to participate in the use of a stand-alone, on-line automated circulation system design, providing dedicated services to participating libraries. Alternative A is called a star configuration because several communication lines and terminals radiate out from one central processing unit. Within PLS, either all member libraries could participate and each become one point of the star, or a few of the libraries could form a limited PLS member library automated circulation system. Thus, two PLS options can be included in Alternative A, as follows:

A-1: Participation by all PLS member libraries, all purchasing a share of one CPU and contributing to the ongoing expenses of the shared system.

A-2: Participation by those PLS member libraries who wish to share in the use of a CPU to perform the circulation function within their libraries. Non-participating libraries would continue to use the teletype communication system between themselves and PLS headquarters, or non-participating libraries could have terminals used for intra-system ILL requests to the "participating" libraries for electronic mail/communications among all the libraries. PLS headquarters would be the communications point between libraries sharing in an automated circulation system and the others retaining their current circulation systems or automating independently of the other PLS members.

The second alternative (Alternative B) within the stand-alone, on-line system design includes the use of two or more CPUs from the same vendor, each designed to meet the needs of one member library or a group of member libraries. PLS member libraries could split into two or three groups and each purchase their own CPU, servicing their own defined areas. There is flexibility in this approach in that libraries can participate when the financial resources become available. Should one of the computers

experience a problem then only the library or libraries directly linked to that computer would experience down time.

However, a problem with separate CPUs serving PLS member libraries is that none of the library system vendors currently provides the capability of communicating with another circulation control system--even one of its own. Therefore, Alternative B will not be pursued further in this feasibility study, since its implementation by PLS within the next several years would be largely conjectural.

The issues of communicating among and between different circulation control systems are even more complex and involve technical, economic and organizational concerns.

Technical Issues

At present there are no communications standards among libraries or vendors. Therefore, interfaces would need to be able to link data bases with different amounts and quality of data elements in a record stored in the varying circulation systems. In addition, each terminal operator would probably need to format the inquiry request in different ways to accommodate each automated system's internal structure. Each develops its own automated circulation system to meet its individual library's needs. Vendors respond to the individual functional specifications of the purchasing library, and, in essence, seem to promote the development of the varying data base elements. If vendors developed a standard inter-vendor communications interface, then all the libraries wishing to communicate with one another

could do so if they have a defined, common data element or index to retrieve a record from a different data base. However, this standard intra- and inter-vendor communications interface should not be anticipated for at least two to three years. Once the standard has been created, then the vendors will need at least an additional year for it to be implemented and made generally available to vendor customers.

Economic Issues:

Economics suggests that actual work in the area of vendor-to-vendor communications protocol has been deferred by the vendors. As the result of a high demand market, each vendor uses the lack of a communications standard as a marketing strategy to "encourage" all libraries in one geographic area to stay with that vendor. This is an interesting market strategy in that the vendors have not even developed any communication links with another of their own circulation system computers. However, without a communications standard being imposed upon the vendors, the ability to communicate from one vendor's circulation system to another is problematical at best.

Organizational Issues:

Libraries in a region would have to meet and agree to a set of standards pertaining to data stored in circulation systems. The field definitions, cataloging standards and procedures, etc., must be addressed. Difficult questions arise concerning the treatment of libraries not adhering to standards, data in existing circulation systems input prior to the

creation of the standards, etc.

Each independent circulation system might require a full-time operator and its own computer room. Duplicate costs would also occur in creating the required environment and space needs for the computer (electricity, air conditioning, etc.).

Summary

As a result of the preliminary analysis of the operations and costs of each of the four options available to PLS as they relate to the three automated alternatives, Alternative A-1 and A-2 were put to a cost-benefit analysis. The result of this analysis is presented in the next section.

VI. ANALYSIS OF CIRCULATION CONTROL ALTERNATIVES

This section explores the costs and quantitative benefits of each alternative, including the present manual/photocharging combination of systems found in PLS member libraries. Throughout this analysis, costs have been estimated high and a conservative approach (low estimates) has been taken concerning benefits. Whenever data is not available, estimates have been made and this data has been so identified in the text and tables.

QUALITATIVE BENEFITS

There are qualitative benefits as well as quantitative benefits which can be achieved through the system-wide shared approach to absorb volume growth, improve services to patrons without increasing staff workload and make more efficient and effective use of book stock and book funds. These benefits are as follows:

Improved Patron Service

Increased timeliness and accuracy of information will improve service. For example, with the shared bibliographic data base, patrons will have access to information immediately describing where an item may be located, including which library owns it and the item's availability. If a patron wishes to place a hold on an item, that can be done immediately.

When the item is returned to any of the participating libraries, the hold status of that item is alerted to the clerk checking in materials.

Because the item is then trapped for the patron, all other items not on hold are ready for shelving, saving the time of clerical staff to check the status of each item again after the check-in procedure. As a result, those items not trapped can be shelved immediately, making materials available more quickly for other patrons.

Up-to-date information detailing the use of materials will aid in selection of items to be transferred to other libraries, withdrawn from the shelves, or placed in residual storage. Items placed in residual storage could still be available for access if required. Item categories for special handling by the system may be set and changed as need arises. For example, best sellers may be assigned a shorter loan period for a specified time.

Renewal by telephone is possible for all participating libraries. The system would be able to immediately identify the hold status of the item being renewed, bringing more rapid response to borrower requests.

Capacity to Absorb Circulation Growth

Increase in items circulated on an hourly basis can easily be accommodated without an increase in staff by the proposed system. Placing holds and processing overdues will not require additional staff time.

Increased Accuracy Describing Patron Status and Item Status

Staff have access to information on the status of each patron and item

at the circulation desk. Information is therefore available on overdue materials, outstanding fines, etc. for each individual library patron (within the shared system) at check-out, thus tightening delinquency control. Library cards requiring address validation (because mail has been returned to sender) are trapped at the circulation desk, as are expired cards. Duplicate registrations between branches and systems can be minimized and eliminated if desired. Lost and stolen library cards can be monitored. The possibility of patrons switching control cards (T-cards) in order to check out an expensive book and check in a paperback in its place is eliminated because the item is represented in the data base, rather than by T-card, which presently leaves the library with the item. Only the T-card number remains in the library as a record of the transaction in the current systems. Fines are calculated automatically, reducing the possibility of human error. Fine notices are ready to mail at regular intervals.

Collection Management

Staff can be alerted if an attempted withdrawal from the library or in the automated system is a "last copy." The library can categorize items available for inter-library loan, and the system will control inter-library holds accordingly. The use of portable equipment facilitates taking of regular inventory to identify items missing from the collection and items that belong other than where they are shelved. An inventory is an activity that libraries with a manual circulation system often lack the time or money to do. In addition, the availability of information about combined holdings and corresponding circulation data offers the possibility of real cooperative selection among PLS libraries.

Management Statistics

A PLS circulation control system would be capable of producing a wide variety of statistics to meet working level and management information needs. Reports can be scheduled or produced on demand to meet member library requirements. Detailed analysis of all aspects of circulation control, holds, interlibrary loan, overdues, borrower activity and item activity by Dewey range, language, medium, etc. are available. These reports would be of value in tailoring collections to community needs. Studies to identify the types of patrons and geographic location of patrons using library services are possible from analytical reports based on borrower address and branch use. Under Alternative A-1, statistics would be available describing each participating member with the sum of the data describing the interactions within the PLS member libraries individually and the shared activities in the system as a whole. Within Alternative A-2, the information generated would be more restrictive, including only the limited participation, but would still provide statistical data for those member libraries. These reports would be helpful for a variety of purposes (e.g., collection development and management, meeting State statistical reporting requirements).

COST AND BENEFITS OF AUTOMATION

Present System Operating Costs

Appendix D contains the instructions for data collection of hours per week spent on circulation activities, both for the two-week study done by San Mateo County Library and an earlier one-week study done by all PLS

libraries. Except for more detailed explanations of activity, some renumbering, and collapsing the first three registration categories in the one-week study into a single category of registration in the two-week study, the formats are identical. Exhibit 7 summarizes the present annual circulation system personnel and other costs by each member library system. The investment in the existing circulation system is considered a sunk cost and thus is ignored. While some of the equipment that may be displaced with automation has salvage value, such value has not been included in this analysis. Exhibit 8 summarizes the present allocation of hours to circulation functions in each PLS member library. This data is composed of self-reported staff estimates of how they spend their time. The data varies among the libraries, but the data is most likely to be accurate for clerical and paraprofessional personnel. The times reported in each category, including both circulation and catalog filing activities, were multiplied by the appropriate salary rate of the indicated staff person completing the task (see Exhibit 9). Except for Menlo Park at 20%, fringe benefits of 30% were added to the direct labor costs reported by the libraries. This does not include estimates of administrative overhead or other costs that would not change, regardless of the circulation system employed in the library.

Description of the PLS System

If the existing hours of operation are maintained in member libraries, the system will be operating about 73 hours per week, Monday through Sunday. Disc capacity will be substantial because some 1,789,017 volumes, 1,052,362 titles and 226,038 patron records will need to be stored in the data base (see Appendix B). The system will link the 76 terminals necessary

to support circulation and reference activities in participating libraries, with a combined annual circulation of 3,529,530. If libraries choose to add an on-line catalog in a shared, or partially shared system, additional terminals will be necessary for patron access into the bibliographic data base. PLS member librarians indicated the number of terminals necessary for automated circulation activities in each of their library's facilities. The distribution of computer terminals is detailed in Appendix C.

Not all PLS member libraries may wish to participate in one shared automated circulation system. However, during interviews conducted September 22 - September 25, 1980, all PLS libraries except San Mateo City Public Library asked to be included in a limited system analysis. Within a limited system the existing hours of operation would be the same, 73 hours per week, Monday through Sunday. Disc capacity would be required for an annual circulation of 3,094,902 volumes, an estimated 877,979 titles[1] and approximately 202,218 patron records would need to be stored in the data base. The limited system would connect 69 terminals, including circulation, reference and patron registration data entry terminals, and portable terminals to support the circulation, interlibrary loan, and reference activities in participating libraries. See Appendix C for detail.

Alternative A

Within Alternative A, there is one computer servicing all participating libraries. To provide more information, costs will be presented describing the two options available within this alternative.

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[1] Using an approximation of 1.7 titles per volume, as identified by Joseph Becker, 1979.

Alternative A-1

The first sub-alternative describes the needs of a shared system serving all PLS libraries. Computer capacity, discs, terminals, site preparation, voltage regulators and other costs would be purchased at the same time for all member libraries, eliminating future problems in expanding the computer capacity and operations to serve additional participating libraries. Costs for this sub-alternative are displayed on Exhibit 10.

Alternative A-2

The second sub-alternative would require a computer system to meet the needs of the seven libraries which appear to be immediately interested in developing a shared system.

Consideration will need to be made in terms of future growth, if other public libraries wish to join the limited shared system at a later date. There are a number of questions that may arise. Who would pay for the additional equipment? What kind of disruption would the existing system endure during the growth process? What kind of additional costs would be identified in system implementation regarding patron records from libraries not sharing the system? Within the limited shared system, the existing teletype communications would remain in the non-participating libraries. PLS headquarters would become the interchange between the shared automated circulation system and those libraries not participating. The Union File, currently maintained manually in the County Library headquarters by both

PLS and County staff would probably be relocated and maintained by PLS staff only. The manual PLS union file would most likely be limited to the holdings of those libraries not participating in a shared automated circulation system. Another possibility is that non-participants could get terminals for system communications and ILL use which could then replace use of teletypes and the Union File. Another consideration in terms of future growth is the possibility of eventually evolving the automated circulation system into an on-line catalog, which would require a substantial number of public access terminals to be added to the system. It is sufficient at this point to ask vendors to comment on their ability to add memory and terminals to any configuration proposed now for automated circulation. This would be particularly useful if the libraries can presently estimate the number of additional memory and terminals they would require for an on-line catalog. Libraries presently using Computer Output on Microfilm (COM) catalogs estimate 1 microfilm reader per 30-40,000 circulations. The number of COM microfilm readers may approximate the number of terminals for an on-line catalog. In addition, the National Science Foundation has awarded a $97,902 grant to develop an algorithm for estimating the number of public information terminals needed to support an on-line public catalog.

Communications issues involve cost, performance and reliability tradeoffs. While a single dedicated line from the computer (CPU) to each terminal is preferable for performance and reliability reasons, the costs incurred from such an approach make this option economically unfeasible. Within San Mateo County, the PLS member libraries currently use the County's microwave communications network with telephone company lines connecting each library with the microwave network. This network would be able to

handle the communications needs of libraries that would be participating in a shared automated circulation system. Use of the microwave lines will be considerably less costly than using the telephone company equipment to connect each library with the CPU.

The labeling of each item to be added to the central data base will be an expensive process, both in terms of staff time to handle each item and input data into the computer during the conversion process as well as the cost of the labels themselves. Thus, each library should seriously consider an extensive weeding process prior to or during conversion to reduce these costs.

Potential Automated System Benefits

An automated circulation control system offers the PLS member libraries substantial benefits. In general, the realizable benefits can be stated in terms of cost savings in activities associated with circulation through the automation of many clerical duties and through the avoidance of some non-personnel costs incurred in the present system. Clerical savings are particularly dramatic in the cases of overdues processing, holds handling, and statistical recordkeeping. These benefits are, in fact, the difference between operating costs associated with the present system and the automated system as shown in Exhibit 9.

In summary, the benefits associated with automation are as follows:

- An automated circulation control system could ultimately reduce staff requirements associated with circulation functions substantially if all eight libraries joined in the system.

Some of the staff freed could be reassigned to provide other services, many of which were reduced because of Proposition 13.

- If the automated system in effect functions as a single reserve list in the area of holds, it is possible to better satisfy patron demand, both because holds can be easily placed on any copy held in any of the libraries participating in the system and because different editions, if linked in the data base, could have a hold placed on them. In addition, whenever new copies are added to the data base, holds previously placed could be satisfied. For the preceding reasons, holds can be filled faster in the automated system.

- Major materials costs associated with present circulation control systems can be eliminated (e.g., the cost of transaction cards, camera maintenance, film, associated film costs, and book cards).

- Items overdue will be identified and notices prepared and sent in a timely manner to the responsible patrons. Consequently, delinquent patrons will be identified at check-out time resulting in a corresponding reduction in the loss of unreturned or "lost items." Additionally, the amount of fines revenues is likely to increase from 25% to 40% based on the experiences of other public libraries with automated circulation control systems, one of whom did not pursue the matter of a fine less than a dollar under the manual system, but was able to do so with its automated system.

- Items with little demand in each library's collection that are duplicated can be reduced both through collection management activities and by access to information concerning the holdings and availability of specific items in other member library collections.

- An inventory performed with portable terminals would allow the library to accurately determine its loss rate and pinpoint missing items. With manual circulation systems such inventories are rarely, if ever, done because they are extremely time-consuming.

The most important quantifiable benefit associated with automation of the existing circulation control system among PLS member libraries is the assumption that personnel cost savings are based on the freeing up of resources from present circulation control activities. The payroll costs are reduced only if personnel manpower levels can be reduced through attrition. The reassignment or reallocation of resources could benefit other personnel functions within the library (e.g. an individual whose time is freed up 40% still must be paid a full-time salary, therefore enabling that staff person

to perform other duties).

PLS member libraries are still facing the cutbacks required by the implementation of Proposition 13 in 1978. While there are fewer public service hours, circulation has risen on an hourly basis by 18% between 1978 and 1980. Other realities facing the libraries operating within a shared system are the various policies individual to the libraries and the different levels of efficiency in each library. Thus, labor savings claimed for this analysis are concentrated in the overdues, holds, registration, statistics, interlibrary loans and locator file areas, for a total of $6,960 per week for all PLS members, or $6,326 per week for limited participation in a shared circulation system.

Existing circulation related supply costs have been estimated in Exhibit 7. Since automation is not planned to include San Mateo City Public Library in Alternative A-2, we can estimate that all except $5,000 per year attributable to San Mateo City Public Library would be eliminated in the remaining libraries.

Fines for items returned without the patron present (e.g. via the book drop), can be recorded against the patron's record. The system monitors fines owed, waived, and collected, and reports cash balance at the end of the day. Six of the eight PLS libraries identified their income from fines in fiscal year 1978-79 as totaling $117,896. Applying a twenty-five percent (25%) expected increase in fines factor, an additional $29,474 would be generated in all eight libraries. In terms of the limited shared system, again applying the 25% expected increase, the additional potential estimated income from fines will be $34,387.

Overdue notices are produced in zip code order and are accurate to the time of printing, thus avoiding sending notices to users who have already returned books or paid fines. Notices contain detailed item identification and price information. Branch and system scheduled statistics are continuously updated. Therefore each report is current to the time of printing. Statistical reports on circulation by borrower and item categories are not subject to individual interpretation of what is included and/or excluded, making them more meaningful for comparative analysis. The production of "purchase alerts" for high demand titles identifies the need for additional copies, making the library staff more responsive to community requirements.

Since borrower status is available at the circulation desk, delinquent users can be prevented from further borrowing at both the individual library or branch and any library within the PLS members until the delinquency status has been resolved. The more timely printing of detailed overdue notices should result in more prompt return of overdue items. Recall notice capability is available to recall overdue items wanted to fill holds. Books at the bindery, in the stacks, in processing, in transit to another location, are all controlled by the circulation system. Circulation problems (e.g. "borrower claims returned," clerical error, excessive claims returned, or items returned by users to shelves without check-in in order to avoid fine payment), are all monitored by the system.

An automated system would identify at check-out the "problem" or delinquency patrons who are habitual offenders, leading to a potential reduction of items lost by each member library each year. The potential

for reducing losses is high. However, only two PLS libraries were able to provide figures describing the income from damaged and replaced items. One library did not report income figures and the remaining five libraries combined these figures with fines, reserves income and/or rental fees. The libraries apparently do not maintain specific figures describing the value of items lost. This figure is, at best, a possible indication of the value of lost items, only in terms of what was returned to the shelves.

If all PLS member libraries joined in one shared automated circulation system, the need for the existing teletype communication would be eliminated. The requesting library would be able to quickly identify the specific libraries holding copies of desired items and the current status of each copy (e.g., on the shelf, checked-out, etc.) by performing an inquiry with the aid of the automated circulation control system. Provided that a shared system included ability to send lengthy and varied messages to other terminals, the circulation system would replace the teletypes as the system's communication system. The automated system would also allow various user-related messages to be directed from one terminal to another or for the message to be broadcast to all terminals. For purposes of this analysis, potential cost savings of this direct inquiry approach are estimated at $2,500 per year. An additional outcome likely to occur as the result of the automated circulation control system is the load leveling effect on ILL. Similar to the load leveling effects being experienced among OCLC users in some geographic regions, ILL transactions should become more evenly distributed since the librarian is likely to request an item from the closest available facility that owns the item.

The bibliographic data base for the automated circulation system will require that specific descriptive information be recorded in the title file. Index fields will be defined, with the list possibly including, but not limited to the following:

- author
- title
- LC card number
- subject

Thus, the librarian will be able to make inquiries into the data base to identify the desired item. Since the bibliographic information is already in the data base, and librarians will be using this data base for PLS loans and ILLs, and items checked-out will be identified through this data base, the libraries may eventually wish to implement an on-line catalog with terminals available for patrons to search the files for needed or desired items. The bibliographic data base will be maintained as part of the automated circulation system. Maintaining manual card catalogs and shelf lists would become added, nonessential tasks if libraries invest in terminals to replace card catalogs. Thus, all manual catalog maintenance tasks could be eliminated. For purposes of this analysis, no cost savings for an on-line catalog will be estimated. Exhibit 11 provides a seven-year projected cost comparison of continuing the present manual system versus automation of circulation among PLS member libraries. Retrospective conversion is assumed to require 20% of manual staff costs during Year 1 and 10% of manual staff costs during Year 2.

Costs and Benefits of Automation

For this analysis, costs are presented in terms of the Net Present Values of Alternative A shown on Exhibit 12. This approach is used because it takes into account the timing of when costs are incurred and when the financial payoffs of benefits start to accrue. The internal rate of return establishes the time value of money and for this analysis a rate of nine percent (9%) was chosen. Net Present Value of alternatives is a technique used by private business to compare alternative uses of money, such as merely investing the money used for initial and ongoing costs in an investment that returns nine percent annually instead of purchasing and maintaining the proposed system.

By using this approach, the benefits are spread over a time period reflecting when the value of the investment will be realized. The money invested in the startup of the system(s) is assumed to have a higher value at that time and will decrease in value as the benefits are realized. Both costs and benefits have been indexed to annual inflation increases of nine percent to reflect the projected real costs over the next seven years. In the implementation of an automated circulation system, benefits are not usually realized in the first year of operation. In the second year, a partial realization of benefits is predicted to occur. The reason for the delayed benefits is because of a number of staff that will be needed to aid in the conversion process. In converting to automation, libraries usually temporarily reassign existing staff and/or bring in temporary help. In addition, after an initial high capital investment year of purchase of a system for either alternative, assuming the system is purchased,

yearly operating costs are considerably less for the following years.

According to Exhibit 12, the PLS option with the higher net present value is Alternative A-1, the automated circulation system with participation by all PLS member libraries.

The breakeven point for Alternative A-1 indicated that the monetary investment in the system will be returned when the system is in Year 4 of operation. Based on a seven-year system life, investment costs are returned while PLS has the opportunity to realize the qualitative benefits of automation. If Alternative A-2 is taken, then the breakeven point still occurs in Year 4 of operation. Although one of the largest city libraries in the county is not anticipated to invest in a PLS shared system at the present time, it does not substantially change the breakeven point. For one suggested distribution of shares, see Appendix B.

For the purposes of this analysis, a seven-year system lifespan has been defined for system requirements as defined by current need. In fact, the utility of the currently defined system is expected to span seven to ten years or longer. Over the implementation period, more libraries may wish to participate in the limited shared system, requiring additional capital investment. As computer systems become more technologically advanced, the libraries may decide to modify the original system for one which has the capacity to do more functions (e.g. on-line catalog, acquisitions) and/or be more responsive to the changing needs of the libraries.

Conclusion

Alternative A-1 shows the highest net present value within the initial system lifespan of seven years, beginning to pay back initial investment costs in Year 4.

Alternative A-2, the limited shared system, has a lower net present value, reflecting the exclusion of San Mateo City Library, but is not very different from A-1. The major loss in this alternative is the lost benefit of computer access to San Mateo City Library's collection by all PLS libraries and computer access to other PLS library collections by San Mateo City Library.

Summary of Analysis

The qualitative impacts of automation support its implementation within the PLS member libraries. While the quantitative analysis of the costs for automation and the anticipated dollar benefits may raise a question in regard to the monetary support for such a system, decision makers should keep in mind that the figures arrived at are conservative in that staff savings are perhaps estimated lower than in reality, retrospective conversion and equipment (e.g., telecommunications) have not been underestimated, and circulation has been assumed to remain constant. Equally if not more important are benefits that are difficult to cost, such as increased availability of materials for borrowers which may increase circulation 10-20%, and the possibility of reducing losses of high demand materials that are costly or difficult to replace (e.g. out of print). The latter

benefit may result from having information on a patron's delinquent status readily available should he attempt to borrow more materials.

Technology in the field is constantly changing. Costs are decreasing dramatically (e.g. non-volatile bubble memory is projected to decrease 50% in cost in the next two years). Until recently, private business depreciated computer equipment at, say, 10% per year, assuming a salvage value after five years of 50% of the original cost. However, private business now faces the situation where computer equipment purchased today has essentially no salvage value after five years, which is altering their previous schedule of depreciation with respect to taxation. However, publicly funded entities do not suffer or benefit from tax laws as do private businesses, so their viewpoint is different. It was suggested that a capital replacement reserve be built into the cost-benefit analysis presented here, but an argument can be made that even if there is essentially no salvage value of the computer equipment discussed here after five years, the libraries will continue to use it for as long as there is 1) sufficient capability to accommodate growth of the collection and possibly add functions such as an on-line catalog, and 2) the annual cost of running the system is considerably lower than scrapping it in favor of a new system. In any case, for purposes of this study, a capital replacement reserve has not been included. Future benefits for PLS should be evident as more and more library functions become automated.

Without a readily accessible method to access bibliographic files, the libraries in San Mateo County may be left behind with limited access to other libraries and library information networks in the Bay Area, at the

state level and nationally. Certainly the retrospective conversion of bibliographic records into machine-readable form that is needed to implement an automated circulation system is also a prerequisite for a future on-line catalog.

Therefore, it is recommended that PLS proceed to prepare the necessary Request for Proposal document and to solicit proposals from vendors for a large, centralized, minicomputer-based, dedicated, stand-alone on-line circulation control system.

VII. AN ACTION PLAN FOR PLS

The analysis of alternatives results in the recommendation for PLS to acquire a single automated system serving, at best, all member libraries, or, at minimum, a participation for all those who wish to take part. Consequently, a number of issues and activities that flow from that recommendation can be identified. These activities include: the selection process, the contract, implementation suggestions, cost-sharing algorithm, source of funds, and are the key factors for success.

The Selection Process

Once the decision is made, it will have long-term impact upon the PLS member libraries, both participating and non-participating. Therefore, the selection, evaluation and contracting for an automated circulation control system must be approached carefully. The preparation of this feasibility study can provide an initial step in the process. However, a number of points should be observed as the Peninsula Library System continues on this path of sharing the costs and benefits of automation.

Because of the difficulty in comparing the systems offered by each of the vendors, it is suggested that the PLS request proposals from vendors rather than bids. A bid is very narrowly defined. If the specifications of a bid are all met, then there would be no choice but to award the contract to the low bidder. Proposals, on the other hand, are recommended for PLS because there are degrees to which a specification can be met which will have a significant impact on all member libraries and the services they

they deliver. Lowest cost is just one of the several factors which may be evaluated. The Requests for Proposals (RFP) document provides the vendors with all of the information that they will need to prepare a proposal. If the RFP document is well prepared then it will require the vendors to respond in a prescribed format which will assist the PLS in evaluating the competing products of vendors.

Content of the RFP

In addition to the specifications, information is generally provided to the vendors about the relative importance of various functions or features of the desired system, along with a general explanation of the evaluation process that will be used. Possible evaluation factors include, but are not limited to: responsiveness to the specifications, reliability, transaction response times, training/documentation, flexibility in the system, and vendor support. The recommended evaluation process is called "Least Total Cost," which recognizes that a low bid price may not be the least total cost to the PLS over a seven-year period because of, for example, high maintenance or supply costs.

Given the size of the anticipated system, PLS should seriously consider establishing some minimum vendor requirements to "qualify" potential vendors and limit the number of proposals to a manageable number. Such minimum qualifications might be having at least three operational circulation control systems in other libraries or having at least one operational system that has 40 to 70 terminals. This would make the evaluation process simpler because a demonstrated capability is much easier

to deliver than a promised capability.

It could be expected the PLS staff could prepare a thorough RFP in two to three months time. Once an RFI is sent to vendors, PLS should allow the vendors six to eight weeks to prepare their responses. About four to eight weeks needs to be allowed for evaluations and contract negotiations with the selected vendor, and a normal delivery time of six to ten months for equipment delivery. This entire process can be expected to take from 10½ to 16 months from the beginning of the RFP preparation through computer arrival.

Although the form of the RFP varies depending upon PLS purchasing practices, legal constraints, etc., an RFP outline, in Exhibit 13, is offered as a guide to ensure that all important issues are considered. Please note that some topics may not apply to PLS.

Some of the PLS specifications may not be met by the current capabilities of any vendor's system. PLS should ask each vendor to identify for each specification which of the following conditions apply:

A. The specifications can be met by the vendor's system as currently installed in other libraries.

B. The specifications will be met by modifying the software to be initially installed in the PLS system by the vendor to meet PLS specifications (the vendor should indicate in person-days the amount of programming effort necessary to implement the change).

C. The specifications will be met within the next 12 months (ask the vendor to identify a specific date) by either modifying the software for PLS (ask for a person-day programming estimate) or a new release of the software available for all customers

(the on-time performance of the vendor should be considered whatever approach is taken by the vendor).

D. The specifications cannot be met and the vendor has no plans to meet the specification.

The Contract

The contract between the Peninsula Library System and the selected vendor will be a most important document. Under no circumstances should PLS accept a standard contract because to do so provides the library with few contractual safeguards. Rather, PLS should state that they will tender a first draft of the contract after the first round of negotiations. In addition, the form and contents of the contemplated contract between PLS and the vendor could be either included as a part of the Request for Proposal document or major elements of the contract could be directly adopted from the RFP document itself. PLS should recognize that it is likely to enter into at least two contracts and perhaps three or four depending upon the selected vendor. One contract will be for the purchase of the system. The second will formalize the maintenance services for the system (with some vendors this may be further split into two separate agreements: one for software maintenance and another for the maintenance of the hardware). In addition to necessary legal reviews, PLS would be well advised to have the contracts reviewed in draft stage, perhaps even before being shared with the vendor, by a consultant who has some experience in drafting and reviewing contracts from a performance and library service viewpoint rather than a legal perspective. The cost for this service can be nominal while the increased protection for the library can pay handsome benefits by clarifying the contract before difficulties are encountered.

A significant portion of the contract should be focused on the issue of acceptance tests. The purpose of acceptance tests is to satisfactorily demonstrate to the library that the system is capable of performing as contracted. Three possible acceptance tests should be considered. A system reliability acceptance test seeks to establish that the installed equipment is reliable and meets a minimum standard of effectiveness (e.g., 98% of scheduled up-time over a required period of time, such as 60 or 90 days). A functional performance acceptance test verifies that the software delivered actually performs those functions stated in the vendor's proposal and contained by reference in the contract. A full-load response time acceptance test is intended to demonstrate that the system (hardware and software) delivered by the vendor is capable of providing adequate response times (defined in the proposal and in the contract) at an established minimum threshold level of terminal transactions when all of the terminals are in place and operational. Tying progress payments to the successful completion of acceptance tests places PLS in the strongest possible position for obtaining the best possible installation assistance from the selected vendor.

Implementation Suggestions

Careful attention should be paid to the selection of the computer room. It should be reasonably secure, not near a lot of foot traffic, have no windows, and have a wide door to facilitate the entry of equipment. A significant number of telephone and power cables will need to be installed. Given the amount of cabling involved, a raised floor should be considered. A peak-load voltage suppressor should be installed (vendor will recommend

the size and type of equipment to be used). This device supplies constant voltage to the computer regardless of voltage variations in the line. Adequate air conditioning must be provided because temperature and humidity are critical.

Staff Involvement

The introduction of the computer system to the public and staff is critical to the success of the system. When appropriate, the proposed system should be discussed with all staff members in each member library, the benefits of the system clearly identified (e.g. identifying delinquent patrons, items on hold, overdue items, preparing notices automatically), while at the same time the implications for staff in terms of changing work assignments or eventual position elimination should be candidly discussed. PLS member libraries should all adopt a policy of position elimination through attrition and transfers rather than termination.

Structured training sessions both for groups of staff members at one central location as well as in each member library should be identified as a requirement in the Request for Proposal document. While conversion will be discussed in a later section, member libraries should anticipate that almost all staff members should be involved in the conversion project. This will develop familiarity and an esprit de corps in the automated system that just does not come about from watching demonstrations and reading about the system. "Hands on" use of the system will dispel and eliminate fears that otherwise might build up among staff members. A firm policy on "labor reduction" (i.e., reassignment or attrition) should be discussed with

staff at this time as well.

Cost-Sharing Algorithm

An algorithm establishes an approximately equitable rate for each participating library in a shared circulation system (see Appendix B). These rates, for this analysis, are an average percent of each library's population area, circulation and total volumes owned as a percent of the PLS total. PLS may wish to define a different cost algorithm that all member libraries feel is an equitable distribution to absorb costs of a shared system such as one simply based on each member's circulations as a percent of the PLS total or a flat fee per circulation or ILL transaction, such as Anaheim Public Library uses (see Appendix F).

Costs of the contemplated automated circulation control system can be divided into two broad types of costs: 1) shared system costs, and 2) individual member library costs. Since the recommended automated system will service the circulation needs of all participating libraries, it seems fair that the participating libraries share the cost for acquiring and maintaining this capability. Costs included in the shared system costs would be: 1) central equipment - the computer, disc drives, line printer, communications hardware; 2) physical facilities - the room, utilities, air conditioning, supplies; 3) a computer operator; and 4) central equipment and software maintenance. Member library dependent costs include: A) costs for the purchase and maintenance for all terminals and modems located in one or more facilities within the member library; and B) a share of the installation and monthly service charges for the dedicated telephone

communication lines to go from library to the microwave antennae.

Source of Funds

The Peninsula Library System should not anticipate receiving one or more large grants to assist in the purchase of an automated circulation control system. Before potential grant possibilities are explored several points need to be made.

The Peninsula Library System operates under a joint-powers agreement between the member libraries. As such, PLS may contract for services and incur debts as a means for providing improved library services to its member libraries. PLS is encouraged to contact the Spokane County Library, Spokane, Washington, for a copy of their agreement with other Spokane area cooperative participant libraries in providing automated circulation control services. As an alternative, the automated system could be purchased by one member library who in turn contracts with other PLS member libraries for the operation and provision of automated circulation control services. Information about this type of alternative may be learned by contacting the Anaheim Public Library. Appendix F is a copy of the current Anaheim Public Library agreement.

PLS should explore lease/purchasing financing arrangements with one or more local banks. This would allow the system to be "paid" on a pay-as-you-go basis and after a number of years the equipment would be owned by member libraries. Banks in other communities have viewed the provision of funds for this kind of library project as an investment in the community

rather than a profit-maximizing endeavor and thus the financing rates can be very attractive. Another option is for one or more member libraries to "loan" capital investment monies available to them to PLS to assist in the purchase of the automated circulation system.

Key Factors of Success

The success of the automated circulation control system that is to be shared among PLS member libraries, in a technical and operational sense, will be dependent on a number of key factors, most of which have been discussed in prior sections of this report. These key factors of success are summarized here. The technical and operational success of the project will be dependent on the:

- Commitment of all member libraries to shared automated circulation control objectives and to the level of funding required to cover their individual shares of the costs over the project life.

- Institution of sound project management procedures to plan, organize and control the selection, implementation and operational phases of the project.
- Selection of the "best qualified" turnkey circulation control system vendor based on a full and complete range of technical, operational and economic criteria.
- Negotiation of a comprehensive contract(s) with the selected vendor.
- Planning and staffing of conversion in each member library based on a target completion date of eighteen (18) months.
- Preparation and follow-through of adequate plans to handle the education, and ultimate reassignment or reduction, of those staff most directly impacted by the shared automated system.

These key factors can best be dealt with on the basis of inter-member library cooperation, since the automated system acquisition and conversion costs need only be incurred once for all member libraries. Cooperation will be a major ingredient in overall success.

In addition to matters of technical and operational success, there are financial success factors which must be recognized. In summary, they are:

- Complete circulating material conversion in eighteen months, thus ensuring member libraries sufficient benefits inside the seven-year shared system horizon to justify the shared automated circulation control system.
- Agreement by all member libraries on the cost sharing algorithms prior to project commencement.
- Development and employment of adequate personnel plans that provide for the reassignment of staff to other "valuable" services or for the reduction of positions by attrition as circulation automation proceeds.
- Investigation of use of CETA personnel to aid in the conversion process within each PLS member library.
- Serious consideration to making the automated circulation system a PLS system, rather than a San Mateo County Library system into which other libraries buy shares. This is particularly attractive to several cities which heavily support PLS participation.

Another success factor would be to have San Mateo City Library reconsider implementing its own system in favor of joining the other PLS libraries in a shared system. The costs of their joining in the shared system probably compare quite favorably overall with the cost of replicating the Georgia system. The addition of other holdings and providing access to the entire PLS collection for San Mateo City Library's own patrons are benefits that should influence this decision.

A final (long-range) success factor is to select a system that could easily accommodate additional functions such as an on-line catalog.

APPENDIX A

PENINSULA LIBRARY SYSTEM MEMBER LIBRARIES

APPENDIX A

PENINSULA LIBRARY SYSTEM MEMBER LIBRARIES

PLS: Peninsula Library System
40 Wembley Drive (located in the Daly City Library)
Daly City, CA 94015
Director: Jane Light

MEMBERS:

Burlingame Public Library
Patti Bergsing, City Librarian
480 Primrose Road
Burlingame, CA 94010
415/344-7107

Daly City Public Library
Sam Chandler, City Librarian
40 Wembley Drive
Daly City, CA 94015
415/992-4500 (City #)
415/878-8900

Menlo Park Public Library
Karen Fredrickson, City Librarian
Civic Center
Menlo Park, CA 94025
415/326-4421

Redwood City Public Library
Karl Vollmayer, City Librarian
881 Jefferson Avenue
Redwood City, CA 94063
415/369-3737

San Bruno Public Library
Beth Svee, City Librarian
701 West Angus
San Bruno, CA 94066
415/588-7726

San Mateo City Library
Al Kraig, City Librarian
55 West Third Avenue
San Mateo, CA 94402
415/574-6950

South San Francisco Public Library
City Librarian (position vacant)
840 West Orange Avenue
South San Francisco, CA 94080
415/877-8521

San Mateo County Library
Jean Davis, County Librarian
25 Tower Road
Belmont, CA 94002
415/573-2056

Branches:

Atherton
Belmont
Brisbane
East Palo Alto
Foster City
Half Moon Bay
Millbrae
Pacifica
Portola Valley
Sanchez (Pacifica)
San Carlos
Woodside
Bookmobile - 2 vehicles

APPENDIX B

SUGGESTED COST SHARING FORMULA

APPENDIX B

SUGGESTED COST SHARING FORMULA[1]

Name of Library	Circulation	%	Patrons	%	Volumes	%	Avg. %
Burlingame	348,612	9.9	15,863	7.0	221,688	12.4	9.8
Daly City	580,233	16.4	23,280	10.3	144,714	8.1	11.6
Menlo Park	263,486	7.5	12,000	5.3	103,400	5.8	6.2
Redwood City	439,601	12.4	18,471	8.2	205,000	11.4	10.6
San Bruno	138,357	3.9	19,006	8.4	81,822	4.6	5.6
San Mateo City[2]	434,628	12.3	23,820	10.6	296,453	16.6	13.2
South San Francisco	260,000	7.4	20,000	8.8	133,000	7.4	7.9
San Mateo County	1,064,613	30.2	93,598	41.4	602,940	33.7	35.1
TOTALS	3,529,530	100	226,038	100	1,789,017	100	100

[1] A Feasibility Study for an Online Catalog System, San Mateo County Library, J. Matthews and Associates, August 1980. The cost sharing formula suggested here is only one of many that could be suggested. A different approach would be to have each library pay for purchase and maintenance of equipment used exclusively by it (e.g. terminals, modems, communications), plus a share of the central site costs (e.g. CPU, site preparation, computer operator) according to their proportion of the total volumes, patrons, and circulation annually.

[2] Estimated.

APPENDIX C

ESTIMATED TERMINALS FOR THE PLS LIBRARIES - CIRCULATION ONLY

APPENDIX C

ESTIMATED TERMINALS FOR THE PLS LIBRARIES - CIRCULATION ONLY

Libraries	Estimated 79-80 Circ.	Circulation Terminals	Ref. & Patron Reg. Terminals	Data Entry Terminals	Portable Terminals
Burlingame					
Main	303,414	3	1	1	
Easton	30,342	1			
Daly City					
Westlake	284,568	2	1		
Serramonte (Main)	286,048	2	1	1	
John D. Daly	29,000	1			
Bayshore	27,000	1			
Menlo Park	250,674	2	1	1	
Redwood City					
Main	286,804	3	1	1	
Schaberg	77,250	2	1		
Fair Oaks	14,488	1			
Audio-Visual	33,798	1			
San Mateo City					
Main	314,136	3	1	2	
Hillsdale	80,244	1	1		
Marina	40,248	1			
San Mateo County					
Atherton	57,800	1			
Belmont	104,558	2	1		
Brisbane	18,818	1			
East Palo Alto	33,414	1			
Foster City	93,748	2	1		
Half Moon Bay	103,012	2	1		
Millbrae	170,936	2	1		
Pacifica	88,754	1	1		
Portola Valley	32,194	1			
San Carlos	174,700	2	1		
Sanchez	38,988	1			
Woodside	45,208	1			
Bookmobile			1		2
Central Library		1	2	2	
San Bruno	133,284	2	1	1	
South San Francisco					
West Orange	184,342	2	1	1	
Grand Avenue	63,114	1			
TOTAL TERMINALS (78)		47	19	10	2

1979-80 circulation figures are estimates based on preliminary counts of circulation during the first part of the fiscal year. These figures do not all include updated figures provided by librarians subsequent to the development of this table.

APPENDIX D

ACTIVITY SURVEY

APPENDIX D

Instructions for Data Collection of Hours per Week Spent on Circulation Activities, San Mateo County Library (Two-Week Period)

Library_____

Classification_____
(including Pages
and Volunteers)

ACTIVITY SURVEY

A list of circulation functions follows with brief descriptions to indicate sub-functions that should be included under each function. It is important that everyone adhere to these functions. For each day of the week, please indicate the amount of time spent on each function. Note: the total time for each day probably will not equal the amount of time you worked because you may perform other functions, breaks, etc. However, it is important to be as accurate as possible.

1. Materials preparation. Includes preparation necessary for material to be accepted into the circulation system (e.g., making and inserting new and replacement cards and pockets into pamphlets, periodicals and phonograph records in branches, as well as Headquarters physical processing, book cards, pocket revision, station card stamping, shelf list preparation).

2. Registration of borrowers. Include here the time spent on interviewing the patron, including requests for renewals; lost card replacements; checking ID; checking files for duplicate cards. Also include typing borrowers' cards and registration forms.

   Filing of registration forms on a daily/weekly basis. Purging of registration records on an annual basis.

3. Check out/check in. Includes slipping books, collection of fines and payments for damaged books, making out fine records and receipts, roladex maintenance, clearing overdues, making out lost T-card, book card, claims returned forms, cross-offs, alphabetizing, filing.

4. Overdues. Includes preparation for and preparing of postal notices, suspension processes, fines suspension, and snags. Preparation for and preparing of bills (includes Branch-Business Office communications) preparation of billing and other information for Central Collections.

5. Holds (Reserves). Includes placing the hold, locating material through shelf-check, visi-check, check of returned materials and snags (missing status).

6. Locator files. Limited to Headquarters activities, including all time spent maintaining and searching UF. May include time spent in searching shelflists where applicable to locating an item or in identifying systemwide holdings preliminary to collection management decisions.

7. Collection management. Includes "immediate replacement" orders placed or records deleted from circulation records such as lost paids, lost unpaids, damaged. Also includes record changes necessitated from the weeding/discard process. Notations on J replacement desk.

8. Statistics. Includes circulation and registration data in branches (e.g. clearing machine, filing tissues, counting hand-charges, recording totals, monthly tally of circulation, numbers of TL's, PLS loans, ILL). At Headquarters this includes time spent gathering statistics (including shipment counts) and recording them.

9. Planning and management. Time spent on these functions as they relate to circulation (e.g. supervision/decision making at circulation desk, training).

10. Shelving. Time spent to return items to their proper shelf position.

11. Inter-Branch, Intra-PLS, Inter-Library Loan. Time spent searching for materials to fill requests with TT tape, verifying in card catalog, station file, preparing routing strips, filing record of outgoing/incoming requests. Includes all time spent on TT relative to requests.

12. Patrons' Inquiries. Includes time involved in answering such questions as "is the book in?" This must be differentiated from general reference questions although reference librarians may be providing this service.

13. Catalog filing/pulling. Includes time spent in alphabetizing, filing and removing cards from the catalog.

14. Shelflist and station file maintenance. This includes all sorting, filing and removal of cards, as well as updating information for STL's.

15. Catalog card preparation typing. In branches, this includes any cards typed for phonograph records and paperbacks. At Headquarters, this includes ordering catalog cards on OCLC.

Revised 5/2[illegible]80

SAN MATEO COUNTY LIBRARY ACTIVITY SURVEY

EMPLOYEE WORK SHEET

Classification:
(incl Pages & Volunteer

Name of Library: _____ Name of Employee: _____ _____

Time should be reported in hours and ten (10) minute intervals. Total time reported each day should be within 90-95% of total time worked. Enter time spent on reference, supervision, book selection, etc. under number 16, Other.

Function or Task	Time						
	Mon	Tue	Wed	Thur	Fri	Sat	Sun
1. Materials Preparation							
2. Registration of borrowers							
3. Check out/Check in							
4. Overdues							
5. Holds (Reserves)							
6. Locator File							
7. Collection Management							
8. Statistics							
9. Planning & Management							
10. Shelving							
11. Inter-Branch, Intra-PLS, Inter-Library							
12. Patrons' Inquiries							
13. Catalog filing/pulling							
14. Shelf List and Station File maintenance							
15. Catalog Card preparation							
16. Other, please specify _____							

Instructions for Data Collection of Hours per Week
Spent on Circulation Activities, Spring, 1980

ACTIVITY SURVEY

A list of circulation functions follows with brief descriptions to indicate subfunctions that should be included under each function. It is important that everyone adhere to these functions. For each day of the week, please indicate the amount of time spent on each function. Note: the total time for each day probably will not equal the amount of time you worked because you may perform other functions, breaks, etc. However, it is important to be as accurate as possible.

1. Registration of borrowers. Include here the time spent on processes working directly with the patron and in maintaining branch files.

2. Maintaining Registration Central File. Review of applications and requests, filing and purging of central registration records.

3. Preparing Registration Records & Cards. Numbering, typing, xeroxing, distribution, etc. of the library card.

4. Check out/Check in. (Charge and discharge) Includes collection of fines, making fine records and receipts, and renewal of items (reissue), filing and pulling of item cards, etc.

5. Overdues. Includes preparation for and preparing of postal and letter notices, suspension processes, fines suspension, and snags (problems).

6. Holds (Reserves). Includes placing the hold, searching of returned materials and on the shelves, and snags (missing status).

7. Locator Files. Includes all time maintaining and searching these files, should they exist. May include time spent in searching shelflists where applicable to locating an item or in identifying systemwide holdings preliminary to collection management decisions.

8. Films Booking. This should include only the "booking" process. Check out, overdues, etc. should be included in their respective categories.

9. Collection Management. Includes orders placed or records deleted from circulation records such as lost paids, lost-unpaids, snags, etc. Also includes record changes necessitated from the weeding/discard process.

10. Materials Preparation. Includes preparation necessary for material to be accepted by the circulation system (e.g., making and inserting cards and pockets, etc.).

11. Statistics. Includes only circulation, registration and collection management data.

12. Planning and Management. Time spent on these functions as they are directly related to any of the other circulation functions.

13. Shelving. Includes time to prepare returned items and return the item to the proper shelf position.

14. Inter-Library Loan. Time spent searching for ILL requests, charging and discharging ILL items.

15. Inquiry. Includes time involved in answering such questions as "Is the book in?", etc.

APPENDIX E

CONVERSION CONSIDERATIONS

APPENDIX E

CONVERSION CONSIDERATIONS

Costs associated with the retrospective conversion of data pertaining to a library's holdings to prepare the data base for an automated circulation can be extensive. Conversion is an activity that is often overlooked during the decision-making process. PLS is already in the fortunate position of having a manually maintained Union File. In addition, the PLS Conversion Project has been preparing bibliographic records for materials acquired post-1972, for conversion into microform to distribute to PLS member libraries. To date, all these records have been checked for their Library of Congress card number, which will be used to match with a more complete bibliographic record (e.g. MARC).

PLS member libraries sharing in an automated circulation system will need to come to agreement on the contents of the bibliographic record data elements. Currently, different catalogs describe the library's holdings with different data elements (e.g. some use Cutter numbers, or different types of cards). Since none of the libraries own a substantial majority of PLS holdings and no records are already in machine-readable form, there is no de facto standard previously designed by any PLS member library. However, San Mateo County Public Library has a subset of MARC data elements that is being proposed as its "standard," which may be approved by most, if not all PLS library directors.

If the current conversion project activities were extended to the remainder of the bibliographic records in the Union File, then the LC card number would act as the index to match records on an existing bibliographic file from another library or a bibliographic utility, e.g., OCLC.

Each member library will be assigned a unique identifying number that will be found in every item and patron barcode number. Often this unique number is located in the first left most digits of the twelve digit barcode number. Care should be taken to ensure that the unique number assigned to each member library does not duplicate already assigned numbers for existing circulation control systems that are located in the area.

It is recommended that a PLS staff person be selected to coordinate the conversion process which is expected to take about 12-18 months. This person would help establish a conversion training program, answer questions, prepare and publish conversion guidelines, etc. In addition, because of geographic proximity of PLS libraries, a team may be formed to successively convert libraries, thus ensuring uniformity in the conversion. However, here it is assumed that the conversion would be a combination of converting books as they return from circulating, plus converting entire sections, without shutting down the library at any time.

The following step-by-step narrative briefly describes the conversion process for all PLS member libraries.

1. Each library completes an extensive weeding of its collection based on a number of factors. Possible factors include: age of item, condition of item, multiple copies of item in collection, and date of last circulation of the item. But the development of a weeding policy is properly the responsibility of each member library and is not presented here.

2. A title data base from another large public library (such as Dade County, Florida) or from several libraries (San Jose Public Library also used Santa Clara County Public Library's data base) is loaded into the computer's bibliographic file. Existing PLS OCLC records would be loaded into the computer at this time.

3. Terminals are installed in participating member libraries. The installation of these terminals may occur in a phased approach. Initially, the terminals are located in a work area within the library or branch library to facilitate the work flow of items and materials to the terminals. Once conversion is complete, these terminals are moved to the circulation desk area.

4. With item in hand, an inquiry is made of the data base to ascertain if the record is already in the bibliographic file. If found, an "Add Item" function is used whereby the barcode and other item related information (e.g., branch library location code and PLS member library location code, call number) is

entered into the item file of the computer. It can be anticipated that it will take about 1.2 minutes to convert an item whose title is already in the bibliographic file and three to five minutes if it is not. If we assume 80% matches and 20% non-matches an average rate of 36 items per hour results (80% at 50 per hour; 20% at 12 per hour). Assuming, conservatively, that only presently employed personnel are directed to doing retrospective conversion (e.g. no CETA), it would require 50,000 hours to convert 1,800,000 volumes, as shown in Exhibit 11. The barcode label is attached to the item at this time and the item is returned to the shelves for circulation. Depending upon each member's policy, a corresponding identical barcode number may be attached to the shelf list card should the library wish to conduct an inventory during conversion. While time consuming, this process will identify those items that are missing once all of the items found within a branch library or facility have been completely labeled. However, initially the library may wish to concentrate on conversion and do an inventory after the system is operational.

5. If no title information is located in the bibliographic file, then a complete bibliographic and item record must be entered into the computer. This may be done immediately, by following the prompts (or questions) from the computer to facilitate the data entry process. Otherwise, the item may be set aside for review by a cataloger. Normally the decision rule is that if the item contains suggested cataloging information (CIP) on the back of the

title page, the terminal operator proceeds to input the data. A barcode label is attached to the item and the number is entered into the system. It will take about three to five minutes per item to input the entire record into the computer. Alternatively, the item may be searched in the OCLC or other cataloging support system (e.g. RLIN). The California State Library has proposed to subsidize public library cataloging with both an initial grant and ongoing support, so it is likely that many of the PLS member libraries will be buying a cataloging terminal in the near future.

Staff members doing conversion should be periodically rotated to prevent fatigue and minimize the number of errors entering the data base. Two to three hours should be considered as the optimum time for use of a terminal at any one time. If all staff members are involved in the conversion the result will be higher staff morale, greater familiarity with the computer system, and fewer errors.

The likely "hit rate" on the data base varies significantly among libraries. Those libraries with relatively low "hit rates" might consider two additional alternatives to speed up and lower the overall costs of the conversion process. A number of COM vendors and book jobbers (e.g. Autographics and Blackwell/North America) offer an OCR batch input to search their data base. Costs on a per-record basis are in the 60¢ to $1.00 range. The resulting records are placed on magnetic tape and input in a batch into the circulation system.

The second alternative is a relatively new product called MINI-MARC. This system can be rented, leased or purchased and could be moved from library to library. Costs vary directly with usage but are in the 50¢ to 75¢ per record area. The system would handle conversion activities as well as cataloging of new items.

Once the system has been installed, PLS member libraries should consider obtaining machine-readable records for new acquisitions from the book jobber that supplies these items. Costs may be attractive (e.g. Baker and Taylor will provide this service for 15¢ per record). A magnetic tape would accompany each order and the information would be loaded into the computer. The disadvantage with this latter approach is that a fair number of these records would be CIP records which can contain incomplete and inaccurate data elements.

Although patron data may need to be manually keyed on an ongoing basis, there is the distinct possibility of transferring bibliographic data to the circulation system via an on-line interface from an automated cataloging system such as CCLC or RLIN. The California State Library's offer of an initial grant and ongoing subsidy to public libraries to use such an automated cataloging system makes this alternative particularly attractive.

The choice of conversion alternative(s) can be facilitated by sampling each library's catalog and matching against several data bases to determine the total expected cost of inputting hits and non-hits into the automated circulation control system data base.

Since many libraries have already converted to automated circulation systems, their experience concerning strategy for creating the machine-readable file would be valuable in planning the retrospective conversion. Salt Lake County Public Library (Midvale, Utah), Alameda County Public Library (California), San Jose Public Library (California), and Wichita Public Library (Kansas) are among this group.

At least one of these libraries employed former catalog card typists being displaced by the introduction of OCLC cataloging to head teams sent to branches to do retrospective conversion, since their previous experience was extremely valuable in dealing with titles requiring original input to the data base.

APPENDIX F

AGREEMENT, CITY OF ANAHEIM AND

BUENA PARK LIBRARY DISTRICT

APPENDIX F

A G R E E M E N T

THIS AGREEMENT is made and entered into this 12th day of February, 1980, by and between the

CITY OF ANAHEIM, a municipal corporation, hereinafter referred to as "CITY,"

A
N
D

BUENA PARK LIBRARY DISTRICT, hereinafter referred to as "LIBRARY DISTRICT."

W I T N E S S E T H:

WHEREAS, CITY has implemented a Library Circulation System for its own use; and

WHEREAS, the System is capable of processing the library circulation needs of multiple jurisdictions; and

WHEREAS, LIBRARY DISTRICT desires to utilize CITY's automated library circulation system and services.

NOW, THEREFORE, FOR AND IN CONSIDERATION OF THE MUTUAL PROMISES, COVENANTS AND CONDITIONS HEREIN CONTAINED, THE PARTIES HERETO AGREE AS FOLLOWS:

1. GENERAL

CITY will provide automated library circulation system services as hereinafter described to LIBRARY DISTRICT.

2. SYSTEM ONLINE SERVICES

System Online Services shall consist of the following:

a. Immediate recording of check-out and check-in transactions.

b. Validation of patron status at time of check-out.

c. Identification of reserved items at time of check-in.

d. Calculation of fines owed at time of check-in.

e. Inquiry capability to item status or patron status.

f. Update and entry capability to change or add item or patron records.

g. Online hours of service shall be the same as the hours of service to the Anaheim Public Library.

3. BATCH SERVICES

Batch Service shall consist of the following:

a. Automated printing of overdue notices.

b. Automated printing of reserve pick-up notices.

c. Circulation statistics and other reports as provided by the System and shown on Exhibit A attached hereto and made a part hereof.

4. SERVICE CHARGES AND COSTS

LIBRARY DISTRICT shall directly procure and pay for:

a. Terminal, modems and other such equipment used solely by LIBRARY DISTRICT.

b. Telephone lines necessary to communicate with the Central Computer Equipment installed at CITY.

c. Bar-Code book labels, Patron Cards and any other supply items used at the Buena Park Library.

LIBRARY DISTRICT will pay CITY Ten Thousand One Hundred Ninety-One Dollars ($10,191.00) upon installation of terminal equipment and beneficial use of System at LIBRARY DISTRICT.

LIBRARY DISTRICT further agrees to pay CITY a service charge for each item checked-out through the automated Circulation System. This charge shall be Seven and One-Half Cents ($.075) per item circulated for a minimum of 225,000 items circulated per year. This charge shall cover LIBRARY DISTRICT's share of the cost of the central computer hardware, and system operation. LIBRARY DISTRICT

further agrees to pay CITY an additional Two Cents ($.02) per item circulated to reimburse CITY for costs associated with mailing overdue notices, and reserve pick-up notices, including both forms and postage. Payments shall be made by LIBRARY DISTRICT within thirty (30) days from receipt of a monthly invoice based on items circulated by LIBRARY DISTRICT.

5. TERM

The term of this agreement shall commence upon execution hereof and shall be in effect through June 30, 1981, and shall continue in effect thereafter unless terminated by either party after giving the other one hundred eighty (180) days' notice of such intent to terminate.

Upon any termination, CITY will provide LIBRARY DISTRICT at no additional cost, a computer tape containing a copy of all LIBRARY DISTRICT Patron Records, Title Records and Associated Item Records. This computer tape will be provided thirty (30) days in advance of termination of service, or other date(s) mutually agreed upon by the parties hereto.

6. NEGOTIATION OF CHARGE RATES

The rates quoted in this agreement shall be subject to negotiation to begin in March of each year commencing in 1981 with said rates to become effective July 1, of the year negotiated. If no agreement between the parties is reached during the March negotiating period or thereafter up to July 1, of any year, this agreement shall terminate effective July 1 of that year.

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7. ADDITIONAL SERVICES

Any services requested by LIBRARY DISTRICT beyond the basic circulation system, as used by Anaheim, if provided, will be charged to LIBRARY DISTRICT, by written agreement, based upon the cost of the change requested.

8. AMENDMENT

The terms of this agreement shall be amended only by written agreement between the parties hereto.

9. ASSIGNMENT

Neither CITY nor LIBRARY DISTRICT shall assign or transfer its interest in this agreement without the written consent of the other party.

10. NOTICES

All notices required by the agreement should be in writing and shall be sufficiently served upon the other party if sent by U. S. mail, postage prepaid, and addressed as follows:

IF SENT TO CITY:

CITY OF ANAHEIM
204 East Lincoln Avenue
Anaheim, California 92805

Attention: City Clerk

or, at such other place as CITY may, from time to time, designate.

IF SENT TO LIBRARY DISTRICT:

BUENA PARK LIBRARY DISTRICT
Post Office Box 6270
Buena Park, California 90620

Attention: Library Director

or, at such other place as DISTRICT may, from time to time, designate by notice to CITY.

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11. ASSURANCE OF CONFIDENTIALITY

CITY agrees that the system designed and used by CITY pursuant to this agreement, does not now, nor will it in the future, maintain a history of items checked out by individual patrons except as required to track outstanding and nonreturned items. No record of individual patron readership, or books checked out shall be maintained upon return of the book and settlement of any related fines.

12. LIABILITY

LIBRARY DISTRICT shall not hold CITY liable to LIBRARY DISTRICT nor to any other party for any loss, damage, liability or expenses of any kind or nature caused by LIBRARY DISTRICT's use of the services provided under this agreement unless CITY does not perform the said services in accordance with accepted professional practices and standards in which event LIBRARY DISTRICT shall limit any claims against CITY to a sum not to exceed the fee owed to CITY for the then current year.

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IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed on the day and year first above written.

CITY OF ANAHEIM, a municipal corporation

By John Seymour
Mayor

ATTEST:

By Lida D. Roberts
City Clerk

"CITY"

BUENA PARK LIBRARY DISTRICT

By Kenneth B. Jones
President of the Board

ATTEST:

By Anna Lyttrin
Secretary of the Board

"LIBRARY DISTRICT"

APPROVED AS TO FORM:

WILLIAM P. HOPKINS, CITY ATTORNEY

By _____
Deputy

Date _____

ROF:fm

EXHIBIT A

REPORT	FREQUENCY
Daily and Monthly Cumulative Activity	Monthly
Delinquent Patron Purge	As System Requires*
Items Purged	As System Requires*
Titles Purged	As System Requires*
Title Listing	As System Requires*
Current Circulation Activity by Category	Quarterly
Inactive Items	Semi-Annual
Item in Transit Longer Than N Days	Weekly
VIP Patron List	As Mutually Agreed
Reserved Items Held Longer Than N Days	Weekly
Annual Circulation Comparison	Quarterly
VIP Patron Status	As Mutually Agreed
Reserves Outstanding Longer Than N Days	Monthly
Outstanding Reserve Characteristics	Monthly
Items to be Purged	As System Requires*

*Certain system functions and resulting reports are schedules based upon internal system parameters and activity levels.

APPENDIX G

SAN MATEO PUBLIC LIBRARY

AUTOMATED BOOK CIRCULATION SYSTEM

APPENDIX G

October 8, 1980

SAN MATEO PUBLIC LIBRARY
AUTOMATED BOOK CIRCULATION SYSTEM

The book circulation system will use a combination of IBM Series I computers, with or without support from the IBM Series 38 computer being installed at San Mateo City Hall.

This system will initially provide full circulation service including the following basic operations:

1. Check-out of books, periodicals, records, etc.
2. Check-in of same.
3. Preparation of overdue notices - keyed to various dates due.
4. Identification of borrowers with library related problems, such as long overdue books, excessive fines, etc.
5. Identification of books on reserve lists.

Since the software was obtained from the Mid-Georgia Regional Library, the value and effectiveness of this system has been thoroughly checked.

Mid-Georgia has also supplied a book data base and means of easy entry to it which will aid in converting the San Mateo Public Library collection to machine readable form. The means of entry method should also make it possible to use other data bases in a similar manner.

If San Mateo Public Library chooses to do so, the Mid-Georgia software may also be used as a means to producing either a superior quality book catalog, along with a microfiche updated total catalog or just the latter. With minimal re-programing this could also be used for an "on-line" form of catalog to supplement or replace the above.

Cost of the system hardware will range between about $45,000 to about $75,000 depending on decisions about batch or on-line operation, the catalog, etc. It is possible, considering the state of the art, that these figures will be reduced by the time data conversion has been completed.

If only basic book data is used then conversion to machine readable form should also be kept at minimal cost.

EXHIBITS

EXHIBIT 1

PLS STATISTICS FY 1978/79
TOTAL EXPENDITURE

Library	Capital Outlay Expenditure		Grand Total all Expenditure		Percentage of Operating Expenditure, 1978-79		Equivalencies		
	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80	Materials	Salaries	Services, Benefits not Charged	Equivalent Operating Expenditure	Expenditure per Capita
San Mateo County	1,198,442	1,071,000	3,720,222	3,637,744	14.68	53.89	---------	2,521,780	10.60
Daly City	---------	24,150	423,294	540,150	15.12	65.49	---------	423,294	5.77
Redwood C[illegible]	30	3,613	704,631	904,514	13.26	75.49	3,395	707,996	12.85
San Mateo	52,650	102,575	953,843	1,016,459	15.88	71.54	10,000	911,193	11.48
Burlingame	2,573	65,000	492,139	616,562	16.02	73.62	95,000	584,566	21.18
Menlo Park	51,022	79,258	347,122	382,298	17.56	75.11	---------	296,100	11.41
San Bruno	46,229	7,887	285,855	339,969	13.41	67.87	10,682	250,308	6.67
South San Francisco	2,700	2,990	436,300	461,010	8.53	70.64	---------	433,600	8.71

Source: California Library Statistics and Directory 1980, California State Library, Sacramento, 1980

EXHIBIT 1 (continued)

OPERATING EXPENDITURE, FY 1978-79

	LIBRARY MATERIALS						LIBRARY STAFF SALARIES AND BENEFITS	
					All Materials			
	Books 1978-79	Periodicals 1978-79	Microforms 1978-79	Audio-visuals 1978-79	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80
San Mateo County	327,575	20,405	7,995	14,164	370,139	214,853	1,359,203	1,703,859
Daly City	50,810	10,000	---	3,200	64,010	75,000	277,230	338,000
Redwood City	65,167	21,408	---	6,894	93,469	127,322	531,941	656,864
San Mateo City	126,836	8,278	2,886	5,084	143,084	143,839	644,687	657,689
Burlingame	67,379	7,514	---	3,536	78,429	85,799	360,411	396,691
Menlo Park	44,500	6,500	---	1,000	52,000	53,000	222,400	225,540
San Bruno	28,525	3,387	226	---	32,138	51,802	162,644	232,582
South San Francisco	31,920	3,800	680	600	37,000	42,000	306,305	321,645

	Operations, supplies, travel, utilities 1978-79	Contract services 1978-79	Transfer within jurisdiction 1978-79	Reimbursing other jurisdiction 1978-79	TOTAL OPERATING EXPENDITURE	
					Actual 1978-79	Estimated 1979-80
San Mateo County	426,816	171,114	136,641	57,867	2,521,780	2,566,744
Daly City	40,070	11,110	25,000	5,874	423,294	516,000
Redwood City	43,441	4,250	---	14,760	704,601	900,901
San Mateo City	90,658	2,671	3,323	---	901,193	913,884
Burlingame	36,882	2,400	---	---	489,566	551,562
Menlo Park	18,800	1,400	---	1,500	296,100	303,040
San Bruno	18,625	7,262	4,332	14,625	239,626	332,082
South San Francisco	90,295	---	---	---	433,600	458,020

EXHIBIT 1 (continued)

INCOME, FY 1978-79

	Local Sources		State Sources		Federal Sources		Reserves, carry-over beginning balance	
	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80
San Mateo County	2,109,807	2,274,602	555,819	36,500	---	---	290,181	265,292
Daly City	412,490	459,240	6,062	6,500	33,320	79,968	---	---
Redwood City	664,654	818,827	106,415	24,000	29,926	28,102	29,102	34,711
San Mateo City	804,968	817,622	---	---	100,536	95,835	23,501	---
Burlingame	503,723	531,562	29,560	20,000	---	---	---	---
Menlo Park	230,485	236,040	22,535	27,000	43,080	20,000	---	---
San Bruno	253,460	322,682	---	1,000	---	12,000	---	---
South San Francisco	425,800	444,020	7,670	7,800	---	---	---	---

	Total available operating income		Income for Capital Outlay		Grand total, all library income	
	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80	Actual 1978-79	Estimated 1979-80
San Mateo County	2,955,807	2,576,394	---	1,250,000	2,955,807	3,826,394
Daly City	451,872	545,708	---	24,150	451,872	569,858
Redwood City	827,097	905,640	535	3,613	827,632	909,253
San Mateo City	929,005	913,457	53,014	103,002	982,019	1,016,459
Burlingame	533,288	551,562	2,573	65,000	535,861	616,562
Menlo Park	296,100	303,040	84,195	79,258	380,295	382,298
San Bruno	253,460	335,682	47,136	8,637	300,596	344,319
South San Francisco	433,470	451,820	2,700	2,990	436,170	454,810

EXHIBIT 1 (continued)

COLLECTIONS, FY 1978-79

	Books added 1978-1979		Volumes held 6/30/1979		Documents, pamphlets		Microforms	
	Units	Titles	Units	Titles	Units	Titles	Units	Titles
San Mateo County	17,058	6,816	600,371	170,690	---	---	---	74
Daly City	5,354	3,013	139,352	---	26,782	---	842	58
Redwood City	6,266	4,356	187,537	---	39,472	---	3,183	---
San Mateo City	12,103	5,707	296,453	---	54,605	54,605	19,479	146
Burlingame	7,679	5,026	216,872	165,564	17,105	---	2,840	2,512
Menlo Park	5,603	4,922	98,605	---	28,266	28,266	751	751
San Bruno	3,860	3,639	78,440	71,190	10,530	---	501	---
South San Francisco	6,636	3,923	134,000	113,000	---	---	1,286	---

	Maps and charts	Art Works for loan	Moving pictures, titles		Audio recordings, titles		Video recordings, titles	Periodical titles received
			16 mm.	Other sizes	Discs	Tapes		
San Mateo County	---	366	229	51	17,853	657	---	636
Daly City	566	231	70	634	6,788	310	---	292
Redwood City	1,078	215	114	310	10,064	11	---	672
San Mateo City	3,851	229	226	321	11,227	156	---	295
Burlingame	1,225	87	5	97	5,287	484	---	340
Menlo Park	---	213	---	143	4,057	419	---	267
San Bruno	741	---	49	29	821	44	---	191
South San Francisco	---	619	---	524	5,500	280	---	220

EXHIBIT 1 (continued)

ACTIVITIES, FY 1978-79

CIRCULATION

	Total circulation all materials	Books, periodicals, pamphlets	All non-book materials	Moving pictures	Audio recordings	Art works
San Mateo County	984,512	968,326	16,186	1,422	14,616	148
Daly City	530,401	489,990	40,411	---	---	---
Redwood City	444,434	404,315	40,119	4,710	33,677	1,282
San Mateo City	466,862	430,467	36,395	7,434	24,038	519
Burlingame	355,821	340,426	15,395	495	13,978	527
Menlo Park	260,955	240,313	20,642	473	16,345	574
San Bruno	143,168	142,450	718	668	---	---
South San Francisco	299,367	288,224	11,143	---	8,038	1,897

	INTERLIBRARY LOAN		REFERENCE			
	Items borrowed	Items lent	Questions answered, local	Questions answered, head-quarters	Referral questions answered	Total questions answered
San Mateo County	2,165	2,372	85,856	571	62	86,489
Daly City	509	493	35,802	---	9	35,811
Redwood City	1,330	688	32,501	---	186	32,687
San Mateo City	588	618	71,036	---	---	71,036
Burlingame	1,292	1,677	26,866	---	143	27,009
Menlo Park	616	499	43,500	---	---	43,500
San Bruno	400	459	16,947	---	---	16,947
South San Francisco	---	387	---	---	---	---

EXHIBIT 1 (continued)

POPULATION AND STAFFING, FY 1978-79

	Population 1/1/1979	Area sq. mi.	Total service outlets	Service hours main library	Total weekly service hours
San Mateo County	238,015	351.00	41	45	394
Daly City	73,300	7.50	4	45	148
Redwood City	55,100	33.10	4	58	145
San Mateo City	79,400	15.00	3	55	100
Burlingame	27,600	6.05	2	73	92
Menlo Park	25,950	19.00	1	56	56
San Bruno	37,500	5.87	1	54	54
South San Francisco	49,800	10.00	2	63	123

	STAFF PAID FROM LIBRARY BUDGET						
		FULL-TIME EQUIVALENT (FTE)					
	Total number staff	Total staff	Librar-ian	Lib. tech. asst.	Clerical	Other	Volunteer hours per week
San Mateo County	140	84.90	24.50	46.40	8.01	6.00	138
Daly City	42	28.00	7.50	-----	20.50	----	10
Redwood City	62	39.10	12.90	15.00	10.20	1.00	43
San Mateo City	74	40.25	12.78	8.38	8.91	10.18	20
Burlingame	53	29 00	8.75	11.75	1.00	7.50	35
Menlo Park	35	15.00	-----	-----	-----	-----	350
San Bruno	16	12.00	4.00	6.00	2.00	-----	42
South San Francisco	37	16.00	5.00	7.00	0.50	3.50	16

EXHIBIT 2

PLS CIRCULATION

Library	Type of Circ System	How Many Instruments	1979-80 Circ.[1]	Patrons[2]	1974-75 Circ[3]	1979-80 Total Operating Expenditure	Number of Volumes Per Title[5]
Burlingame	Dickman	(4)	348,612	15,863	370,827	538,537	1.3
Daly City	Gaylord	(6)	580,233	23,280	427,828	591,210	---
Menlo Park	Brodac	(2)	263,486	12,000	268,157	310,171	1.0
Redwood City	Brodac Hand charge	(1) (2)	~~444,444~~	18,471	557,109	704,601	---
San Mateo	Brodac	(3)	466,862	23,820	624,360	897,993	1.5[6]
San Mateo County	Brodac Hand charge Recordak	(13) (6) (2)	1,064,613	93,598	1,378,388	2,645,021	3.5
San Bruno	Recordak	(2)	138,339	19,006	155,965	321,207	1.1
South San Francisco	Gaylord	(4)	269,462	20,000	330,000	478,380	1.2
			3,576,141	226,038	4,112,684	6,487,120	1.7[4]

[1] California Public Library Report, 1980.

[2] A Feasibility Study for Automated Circulation and Online Catalog System, San Mateo County Library, J. Matthews and Associates, August 1980.

[3] California Library Statistics and Directory, 1976, California State Library, Sacramento, 1976

[4] Recent Joseph E. Becker study regarding centralized processing.

[5] Based on 1978-79 Annual Report.

[6] Self-reported by Library Director

EXHIBIT 3

FY 1979/80 LOAN SURVEY OF PLS MEMBER LIBRARIES

	DIRECT LOANS TO INDIVIDUALS		LOANS TO LIBRARIES	
Library	Individual[1] Library Circulation	Direct Loans[2] to Non-Residents	Estimated PLS[3] Loans to Other PLS Libraries	Estimated Inter-[4] Library Loans to Libraries Outside PLS
Burlingame	257,885	90,727	2,046	205
Daly City	548,130	32,103	670	24
Menlo Park	182,763	80,723	722	37
Redwood City	352,417	87,184	849	[6]
San Bruno	132,695	5,662	565	53
San Mateo City	362,679	71,949	577	41[7,8]
San Mateo County	1,015,798	48,815	1,534	1,328
South San Francisco	232,297	27,703	493	378[7]
TOTALS[5]	3,084,664	444,866	7,456	2,066

[1] 1979/80 Circulation from Appendix B minus Direct Loans to Non-Residents.

[2] This estimate was obtained from the quarterly PLS direct loan surveys (sample period two weeks each, quarterly), assuming that the cumulative eight-week sample activity closely approximates 8/52 of the total year.

[3] Data source: PLS Author/Title Requests FY 1979/80, Total Filled for PLS by Lending Library (PLS).

[4] Data inferred by subtracting Estimated PLS Loans to Other Libraries from number of items lent ILL to other libraries as reported in California Public Library Report 1980 for fiscal year 1979/80.

[5] During FY 1979/80, 3,817 items were borrowed in interlibrary loan for PLS libraries from non-PLS libraries.

[6] California Public Library Report 1980 shows 688 ILLs for Redwood City, most of which are likely to be PLS loans to other PLS libraries. The estimate here is left blank, since the estimated PLS loans from Redwood City already exceed 688.

[7] 1978/79 data used here because 1979/80 data unavailable.

[8] 618 = ILL 1978/79 but 577 = 1979/80 PLS loans.

EXHIBIT 4

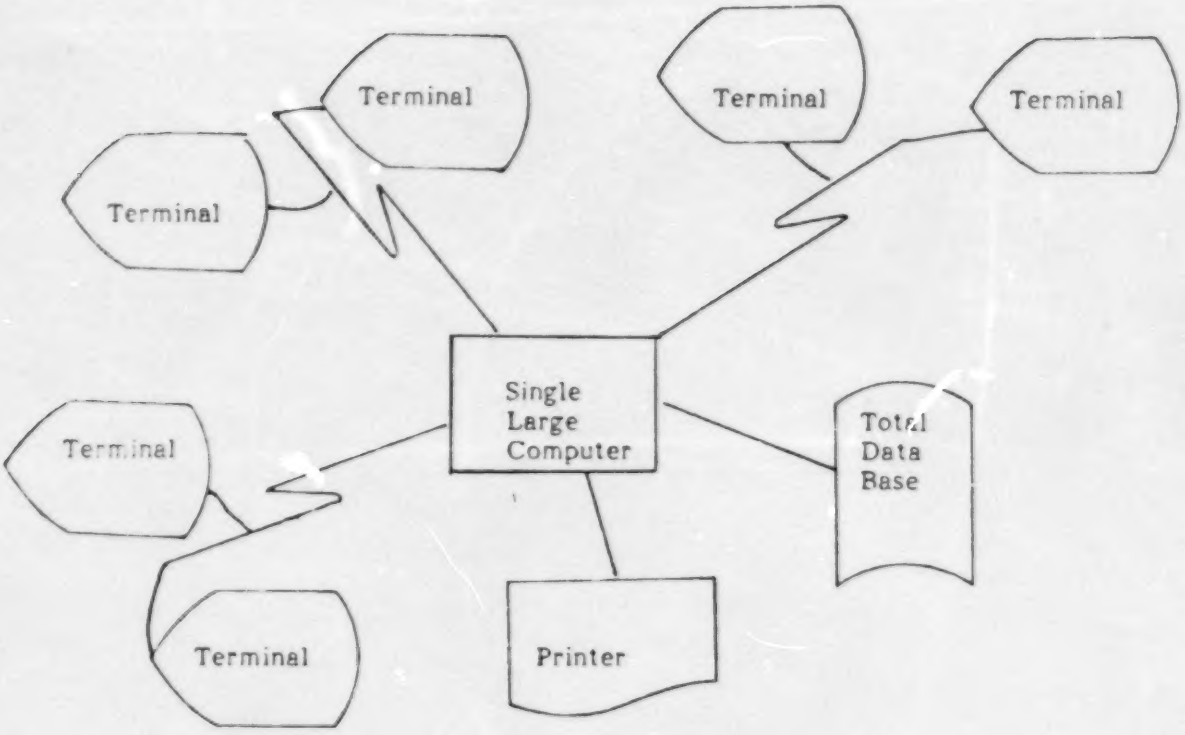
ADVANTAGES/DISADVANTAGES OF CIRCULATION SYSTEMS

	Manual Systems	Photocharging Systems	Automated Systems
ADVANTAGES	Low equipment costs Low equipment maintenance costs	Eliminate some manual card files Good for large circulation volume Increased check out speed Low to moderate equipment costs Low equipment maintenance costs	Potential for lower staff costs Easier to place & handle holds Automatically produce overdue notices and bills Status information on item available Detect delinquent patrons Handle high circulation volumes Improved collection management Improved control on fines, incr. $ Eliminate book cards & pockets Resource sharing facilitated Reduced ILL transaction costs Improved statistical reports
COMMON-ALITIES	Circulate and maintain control of library materials Prepare limited statistical reports Provide basic core of collection management		
DISADVANTAGES	High staff costs High error rates: - overdue notice preparation - manually filing cards Difficult to locate items on hold Difficult to identify delinquent patrons Need for card files Need for fast, accurate typists Difficult to produce statistical reports	High staff costs High error rates: - overdue notice preparation - manually filing cards Difficult to identify items on hold Difficult to identify delinquent patrons Need for card files Need for fast, accurate typists Difficult to produce statistical reports Difficult to determine status of item	Expensive and sophisticated equipment Higher equipment maintenance costs Environmental & physical plant requirements (air conditioning, etc.)

A Feasibility Study for Automation of Circulation Systemwide - Mountain-Valley Library Systems, by J. Matthews & Associates, August 1979

EXHIBIT 5, ALTERNATIVE A

CENTRAL COMPUTER / STAR CONFIGURATION



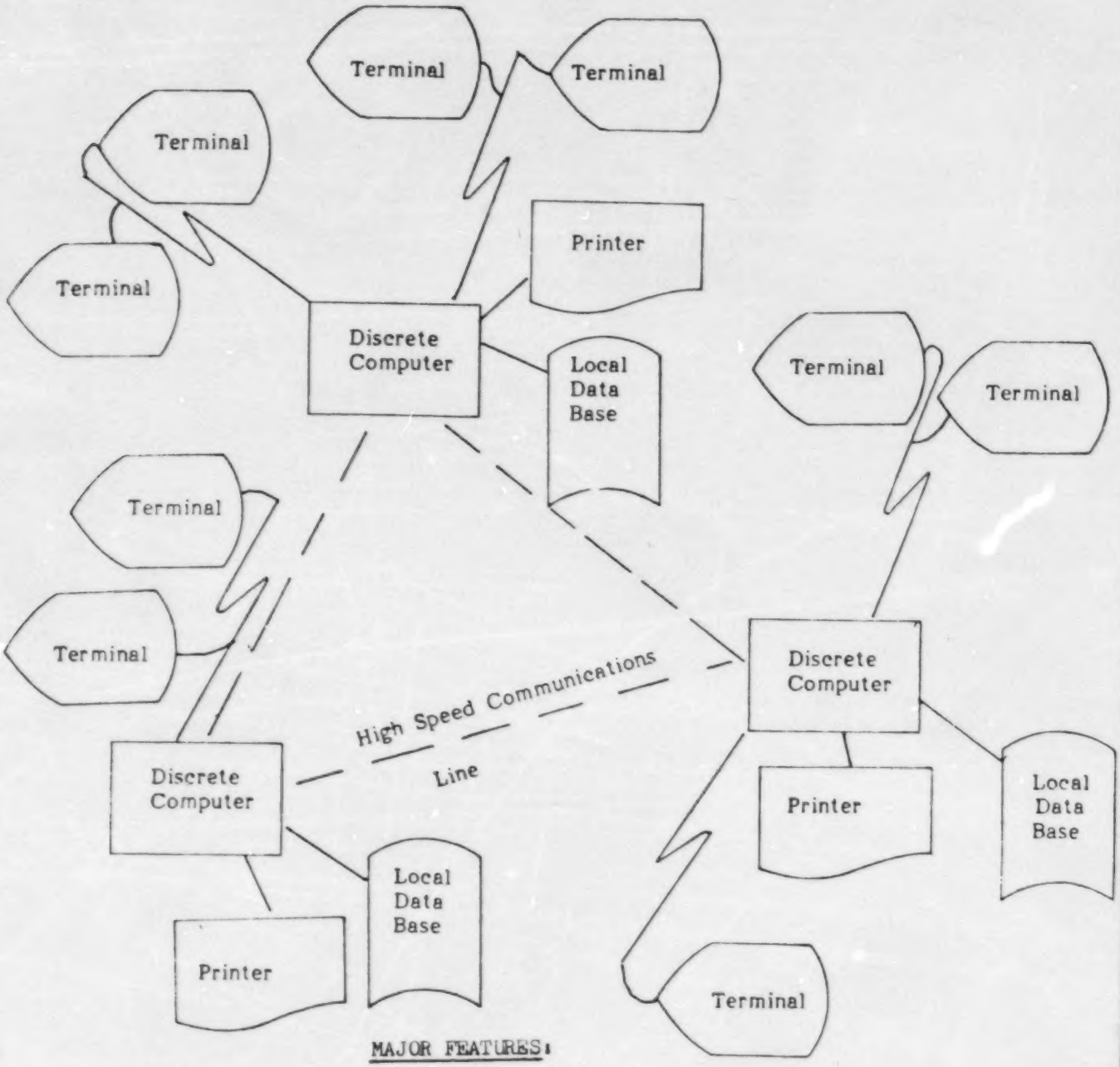
MAJOR FEATURES:

- One central computer
- One central data base
- All terminals connected via phone lines to the central system

A Feasibility Study for Automation of Circulation Systemwide - Mountain-Valley Library Systems, by J. Matthews & Associates, August 1979.

EXHIBIT 6, ALTERNATIVE B

SEPARATE SYSTEMS / RING CONFIGURATION



MAJOR FEATURES:

- X separate systems - same supplier
- Communications interface needed
- High duplication of data and functions

Variation: X separate systems - different supplier

A Feasibility Study for Automation of Circulation Systemwide - Mountain-Valley Library Systems, by J. Matthews & Associates, August 1979.

EXHIBIT 7

FY 1979/80 BUDGETARY INFORMATION

Library	Estimated Circ. Staff Costs[1]	Circ. Supplies Costs	Total Circ. Costs	Actual 1979/80 Circ.[6]	Cost per Circ.
Burlingame	$ 178,360	$ 5,832[2]	$ 184,192	348,612	.53
Daly City	282,204	18,798[3]	301,002	580,233	.52
Menlo Park	71,968	3,294[2]	75,262	263,486	.29
Redwood City	151,580	12,889	164,469	444,434	.37
San Bruno	80,704	7,490	88,194	138,439	.64
San Mateo City	112,164	5,000	117,164	466,862	.25
San Mateo County[4]	637,000	21,152	658,152	1,064,613	.62
South San Francisco[5]	207,896	7,424	215,320	269,462	.80
TOTALS	$1,721,876	$81,879	$1,803,755	3,576,141	.50

[1]Self-reported information. Includes an estimated 30% for fringe benefits, except for Menlo Park, whose fringe benefits are estimated at 20%.

[2]Self-reported information.

[3]Based on cost data in other public libraries, an estimate of 3¢ per circulation.

[4]San Mateo County data shown here is taken from A Feasibility Study for an Automated Circulation and Online Catalog System, San Mateo County Library, J. Matthews and Associates, August 1980. These costs come from the two-week data collection mentioned in Footnote 4 of "Hours Per Week Spent on Circulation Activities, Spring 1980." Volunteer hours were costed at the minimum wage. Fringe benefits are included.

[5]1979/80 labor rates were applied to data collected Sept. 19, 1980 - Oct. 3, 1980.

[6]California Public Library Report, 1980.

EXHIBIT 8A

HOURS PER WEEK SPENT ON CIRCULATION ACTIVITIES, SPRING 1980

Hours per Week	Burlingame[7]		Daly City[6]		Menlo Park[8]	Redwood City		San Mateo City[2]		San Mateo County[4]		San Bruno		South San Francisco[5]
Registration of borrowers	8.0	33.0	35.6	77.1	5.00	17.3	34.6	-----	10.0	57.6[3]	90.8	3.0	8.0	34
Maintain Registration File	10.0		22.5		2.00	7.3		-----		6.9		1.0		18
Prepare Reg. Cards/Records	15.0		19.0		1.25	10.0		-----		26.3		4.0		16
Check out/in	194.0		216.9		42.00	58.2		100.0		518.0		49.7		155
Overdues	36.5		36.7		51.00	60.8		69.5		136.1		9.0		29
Holds	15.0		20.3		10.00	14.5		10.5		47.4		5.5		10
Locator file	0		3.5		4.00	.25		0		39.0		---		3
Films booking	0		----		.25	-----		0		.3		.2		5
Collection management	6.0		41.0		1.50	6.5		0		67.9		20.0		20
Materials preparation	58.5		101.5		12.50	60.0		15.0		104.3		59.7		83
Statistics	7.5		7.0		2.00	19.3		5.0		43.2		.5		6
Planning & management	25.0		23.0		20.50	10.1		30.0		34.2		---		15
Shelving	139.0		83.7		83.00[1]	72.1		100.0		312.3		45.7		88
ILL	24.0		34.5		15.00	10.7		16.0		93.5		18.0		24
Inquiry	0		49.2		21.25	28.5		4.5		90.6		5.5		48
TOTAL CIRCULATION FUNCTIONS	538.5		694.4		271.25	375.5		360.5		1,577.5		221.8		554

[1] Amended Oct. 1980 by City Librarian based on shelving schedule.

[2] Amended Sept. 1980 by City Librarian based on staff schedule.

[3] Estimated at about 10 minutes per registration and 10,000 patrons registered per year.

[4] Two-week data collection regarding circulation was subsequently performed, but the Spring, 1980 hours shown here. 1,577.5 hrs. per week x 52 weeks per year ÷ 2,000 hours per FTE implies 40.5 FTE from the Spring 1980 data. The subsequent study reported by J. Matthews and Associates reported 35.6 FTE, excluding Library Pages.

[5] One week data collection regarding circulation activities performed Sept. 29, 1980 - Oct. 3, 1980.

[6] About 1/6 of circulation activity hours are performed by CETA personnel, whose wages are not paid from the Daly City Library Budget. CETA employees at Daly City were costed at $4.17 per hour, plus 30% fringe benefits.

[7] Data submitted by City Librarian, Sept. 23, 1980.

[8] Amended Oct. 1980 by City Librarian

EXHIBIT 8B

DOLLARS PER WEEK SPENT ON CIRCULATION ACTIVITIES
FOR HOURS SHOWN IN EXHIBIT 8A[1]

Dollars per Week	Burlingame	Daly City	Menlo Park	Redwood City	San Mateo City	San Mateo County	San Bruno	South San Francisco	TOTAL
Registration of borrowers Maintain registration file Prepare reg. cards/records	181	542	49	297	8	575	67	567	2,286
Check out/in	1,430	1,644	231	437	585	4,120	396	1,149	9,992
Overdues	300	277	304	471	517	990	60	190	3,109
Holds	129	166	60	147	82	488	44	71	1,187
Locator file	0	34	207	2	0	623	0	27	713
Films booking	0	0	2	0	0	0	2	46	50
Collection management	43	353	6	53	0	302	169	184	1,110
Materials preparation	307	881	78	497	61	1,142	331	592	3,939
Statistics	62	62	13	172	39	539	5	47	939
Planning & management	231	220	143	106	293	467	0	184	1,644
Shelving	560	542	253	307	403	1,351	233	373	4,022
ILL	187	283	93	111	125	905	148	178	2,030
Inquiry	0	423	125	315	44	748	47	390	2,092
TOTAL CIRCULATION FUNCTIONS	3,430	5,427	1,384	2,915	2,157	12,250	1,552	3,998	33,113

[1] Includes 30% fringe benefits except for Menlo Park with 20% fringe benefits

EXHIBIT 9

COMPARISON BETWEEN TOTAL LABOR COST:
PRESENT SYSTEM AND ESTIMATED POTENTIAL LABOR SAVINGS FROM AUTOMATION
(ALL PLS LIBRARIES = ALTERNATIVE A-1; SAN MATEO CITY LIBRARY
EXCLUDED IN ALTERNATIVE A-2) ON A PER WEEK BASIS

Circulation Function	Total Labor Cost: Present System		Potential** % Labor Reducation Automation	Potential Labor Savings: Automation			
	A-1	A-2		A-1	A-1*	A-2	A-2*
1. Reg. of Borrowers*	$	$		$	$	$	$
2. Maintain Reg. File*	2,286	2,278	30%	686	686	683	683
3. Prep. Reg. recds/cards*							
4. Check out/check in	9,992	9,407	10	999	---	941	---
5. Overdues*	3,109	2,592	90	2,798	2,798	2,332	2,332
6. Holds (reserves)*	1,187	1,105	90	1,068	1,068	996	996
7. Locator file*	713	713	90	642	642	642	642
8. Films booking	50	50	20	10	---	10	---
9. Collection mgmt.	1,110	1,110	10	111	---	111	---
10. Materials Prep.	3,939	3,878	10	394	---	388	---
11. Statistics*	939	900	80	751	751	720	720
12. Planning & mgmt.	1,644	1,351	10	164	---	135	---
13. Shelving	4,022	3,619	10	402	---	362	---
14. Inter-Library Loan*	2,030	1,905	50	1,015	1,015	953	953
15. Inquiry	2,092	2,048	0	---	---	---	---
WEEKLY TOTAL (CIRC)	$33,113	$30,956		$9,040	$6,960	$8,273	$6,326

* Areas claimed for savings in this analysis - e.g., even though check out/check in has an estimated potential 10% labor reduction, it is not counted in savings, but 90% of overdues labor is. Figures in this analysis include fringe benefits estimated at 30% of gross totals of labor costs, excluding Menlo Park, who included fringe benefits at 20% in cost information submitted for this study. Volunteer hours (18.5 per week) at Menlo Park were costed at $2.83 per hour, plus 20% fringe benefits. Volunteer hours (8.0 per week) at South San Francisco) were costed at $3.10 per hour, plus 30% fringe benefits.

** These percentages are San Mateo County Library estimates. Note that the first three activities shown here correspond to Registration of Borrowers, as measured by San Mateo County during its two week study.

EXHIBIT 10

ESTIMATES OF THE FIRST YEAR COSTS FOR
PLS AUTOMATED CIRCULATION SYSTEM (1980/81)

	Alternative A	
	A-1	A-2
Computer[a]	$130,000	$130,000
Disks[b]	110,000	110,000
Terminals[c]	222,800	197,600
Modems[c]	90,000	81,000
Software, Circ Sys[d]	45,000	45,000
Maintenance[e]	55,350	52,875
Voltage Regulator[f]	4,000	4,000
Communications[g]		
Installation	3,520	3,520
Mthly Rec Costs	34,200	31,050
Site Preparation[h]	25,000	25,000
Supplies[i]		
Labels	40,301	33,896
Other	30,000	30,000
Computer Operator[j]	20,150	20,150
TOTALS	$810,321	$764,091

[a]Alternative A-1 and A-2 costs reflect one large minicomputer with tape drive, system console, line printer and communications interface (multiplexor).

[b]Four 300 MB disks in Alternatives A-1 and A-2, since San Mateo City Public Library only contributes about 10% of the patrons, and less than 15% of the circulations and volumes in Alternative A-1. Assume that a 300 MB disk with an average record length of 300 characters holds 700,000 titles and/or patrons.

[c]Alternative A-1 includes 76 terminals with wands @ $2,800 and 2 portable (memory) terminals @ $5,000.

Alternative A-2 has 67 terminals with wands and 2 portable (memory) terminals @ $5,000.

60 modems (30 pairs) @ $1,500 are included in A-1; 54 modems @ $1,500 are in A-2.

[d]Software license charge is identical for A-1 and A-2. It is estimated at $35,000 for the vendor softwar plus $10,000 for an OCLC on-line interface. Both Dataphase and Geac presently offer such an interface.

[e]Estimate is $275 per year per terminal, $115 per year per modem, $13,000 per year for the computer, $13,000 per year for the disks, and $1,000 per year for the printer. The maintenance on the central system is for an 8-hour day, 5-day week. A 16-hour day, 7-day week maintenance contract on the central system would be an additional $40,000 per year.

[f]Peak-load voltage suppressor.

[g]Installation one-time only. Monthly recurring costs are annualized Based on San Mateo County Library estimate of about $450/year per terminal.

[h]Includes air conditioning, electrical wiring, etc.

[i]Labels for 1,789,017 volumes and 226,038 patrons @ $20.00 per 1,000 for Alternative A-1. Alternative A-2 is for 1,492,564 volumes and 202,218 patrons. $30,000 is included for back-up disk packs, paper, forms, etc.

[j]One operator (including 30% fringe benefits) for Alternative A-1 and A-2. Tacoma Public Library advises having several back-up operators.

EXHIBIT 11

ANNUAL COST COMPARISON OVER SEVEN YEARS OF
AUTOMATED AND MANUAL SYSTEMS

YEAR 1 (1981/82)

	Manual		Automated		Manual minus Automated	
	A-1	A-2	A-1	A-2	A-1	A-2
Exhibit 7 - Staff	$2,045,760	$1,912,498				
Exhibit 7 - Supplies	97,280	91,339				
Exhibit 10 - Computer and Operator			$ 883,250	$ 832,859		
Exhibit 9 - Remaining Manual Circulation Staff (80% of Manual Staff)			1,636,608	1,529,998		
Retrospective Conversion (20% of Manual Staff)			409,152	382,500		
TOTAL	$2,143,040	$2,003,837	$2,929,010	$2,745,357	($785,970)	($741,520)
Cost per circulation	.60	.64	.82	.88		

Assume 3,576,141 circulations per year for A-1; 3,109,279 circulations for A-2, as per actual FY 1979/80. Labor, communications, maintenance, labels and supplies are inflated 9% per year, using 1979/80 labor and maintenance as a base for the manual system and 1980/81 computer alternative costs shown in Exhibit 10 as a base for the automated system.

* At 1980/81 costs: Computer Maintenance = $55,350; Operator = $20,150; Supplies = $5,000 (paper, ribbons, magnetic tapes); Labels = $2,000 (100,000 items labeled at $20.00/1,000 for labels); and Communications = $34,200; for a total of $116,700 for A-1. A-2's 1980/81 cost is assumed to be $111,075.

** In Year 2, only ½ as many staff do retrospective conversion as in Year 1, but 80% of the manual circulation activities are assumed to continue under the automated alternative. In Year 3 and succeeding years, retrospective conversion is assumed complete, but 80% of the manual circulation activities still continue.

EXHIBIT 11 (continued)

YEAR 2 (1982/83)

	Manual		Automated		Manual minus Automated	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$2,229,878	$2,084,623				
Supplies	106,035	99,560				
Computer-related expenses*			$ 138,651	$ 131,968		
Remaining Manual Circulation Staff (80% of Manual Staff)**			1,783,902	1,667,698		
Retrospective Conversion (10% of Manual Staff)**			222,988	208,462		
TOTAL	$2,335,913	$2,184,183	$2,145,541	$2,008,128	$ 190,372	$ 176,055
Cost per Circulation	.65	.70	.60	.65		

YEAR 3 (1983/84)

	Manual		Automated		Automated minus Manual	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$2,430,567	$2,272,239				
Supplies	115,578	108,520				
Computer-related expenses			$ 151,130	$ 143,845		
Remaining Manual Circulation Staff**			1,944,453	1,817,790		
TOTAL	$2,546,145	$2,380,759	$2,095,583	$1,961,635	$ 450,562	$ 419,124
Cost per Circulation	.71	.77	.59	.63		

EXHIBIT 11 (continued)

YEAR 4 (1984/85)

	Manual		Automated		Manual minus Automated	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$2,649,318	$2,476,741				
Supplies	125,980	118,286				
Computer-related expenses			$ 164,732	$ 156,791		
Remaining Manual Circulation Staff**			2,119,454	1,981,391		
TOTAL	$2,775,298	$2,595,027	$2,284,186	$2,138,182	$ 491,112	$ 456,845
Cost per Circulation	.78	.83	.64	.69		

YEAR 5 (1985/86)

	Manual		Automated		Automated minus Manual	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$2,887,757	$2,699,648				
Supplies	137,318	128,932				
Computer-related expenses			$ 179,558	$ 170,902		
Remaining Manual Circulation Staff**			2,310,205	2,159,716		
TOTAL	$3,025,075	$2,828,580	$2,489,763	$2,330,618	$ 550,138	$ 497,962
Cost per Circulation	.85	.91	.70	.75		

EXHIBIT 11 (continued)

YEAR 6 (1986/87)

	Manual		Automated		Manual minus Automated	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$3,147,655	$2,942,616				
Supplies	149,677	140,536				
Computer-related expenses			$ 195,718	$ 186,283		
Remaining Manual Circulation Staff**			2,518,123	2,354,090		
TOTAL	$3,297,331	$3,083,152	$2,713,841	$2,540,373	$ 583,490	$ 542,779
Cost per Circulation	.92	.99	.76	.82		

YEAR 7 (1987/88)

	Manual		Automated		Manual minus Automated	
	A-1	A-2	A-1	A-2	A-1	A-2
Staff	$3,430,944	$3,207,451				
Supplies	163,148	153,184				
Computer-related expenses			$ 213,333	$ 203,048		
Remaining Manual Circulation Staff**			2,744,754	2,565,958		
TOTAL	$3,594,092	$3,360,635	$2,958,087	$2,769,006	$ 636,005	$ 591,629
Cost per Circulation	1.01	1.08	.83	.89		

EXHIBIT 12

NET PRESENT VALUE OF
AUTOMATED CIRCULATION SYSTEM ALTERNATIVES

t Year	Manual minus Automated	$(1+d)^t$ Factor for Time t	Net Present Value
	Alternative A-1		
1	$(785,970)	1.0000	$ (785,970)
2	190,372	1.0900	174,653
3	450,562	1.1881	379,229
4	491,112	1.2950	379,237
5	535,182	1.4116	379,131
6	583,490	1.5386	379,234
7	636,005	1.6771	379,229
			1,284,743
	Alternative A-2		
1	$(741,520)	1.0000	$ (741,520)
2	176,055	1.0900	161,518
3	419,124	1.1881	352,768
4	456,845	1.2950	352,776
5	497,962	1.4116	352,764
6	542,779	1.5386	352,774
7	591,629	1.6771	352,769
			$1,183,849

EXHIBIT 13

REQUEST FOR PROPOSALS OUTLINE[1]

Introduction

- Purpose
- General Information and Characteristics of the Library

Rules Governing Competition

- Address or Deliver Proposals to:
- Date of Submission
- Schedule of Activities
- Proposal Validity Period
- Economy of Preparation
- Format of Proposal
- Evaluation Process
- Addendum and Supplements to RFP
- Contact between Vendor and Library
  - Oral Presentations
  - Vendor's Conference
  - Written Questions
  - Protests
- Extension of Time
- Debriefing
- Late Proposals
- Rejection of Proposal
- Vendor's Costs
- News Releases
- Use of RFP Ideas
- Return of RFP
- New Equipment
- Pricing Considerations
- Payment Schedule
- References
- Contractor Responsibility
- Model or Suggested Contract

Requirements

- Definition of Terms
- General Requirements
- Mandatory Requirements/Specifications
- Desired Specifications
- Responses to Specific Questions
- Work Plan or Progress Payments
- Acceptance Criteria
- Vendor Support
- Data Conversion
- Training
- Response Time Requirements
- Documentation
- Supplies Needed
- Bid Deposits
- Performance Bonds
- Annual Appropriation of Funds
- Maintenance

Proposal Instructions

- System Proposal
  - Hardware Configuration
  - Software
  - Site Preparation
  - Training
  - Vendor Support
  - Reference Sites
  - Delivery Lead Time
  - Maintenance
- Cost Data
  - Hardware
  - Software
  - Shipping & Insurance
  - Installation
  - Acceptance Tests
  - Transaction Charges (if any)
  - Maintenance
  - Other Services

[1]Matthews, Joseph, Choosing an Automated Library System, American Library Association, 1980, Chicago, p. 45.